

FREDERICK ALBERT SUTTON GEOLOGY & GEOPHYSICS BUILDING
University of Utah - Salt Lake City Utah
DECM Project No. 04030750

FACILITIES PROGRAM

February 28, 2005

COOPER ROBERTS RICHARD ARCHITECTS

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**FREDERICK ALBERT SUTTON GEOLOGY & GEOPHYSICS BUILDING
UNIVERSITY OF UTAH**

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ACKNOWLEDGEMENTS

The contributions of the following individuals and others are gratefully acknowledged. Their dedicated efforts have made this document possible.

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In addition to the named individuals, the programming team is grateful to the entire Department of Geology & Geophysics for their insight and help.

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8 September, 2005

Date



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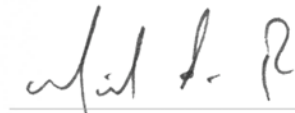
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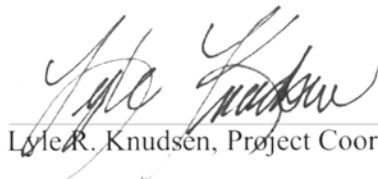
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2.0 EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Frederick Albert Sutton Geology and Geophysics Building will be a new facility to house the University of Utah's Department of Geology and Geophysics, part of the College of Mines and Earth Sciences (CMES). College administrative functions and the University of Utah Seismograph Stations (UUSS) are also slated as occupants of the new building.

Mission

The new building is intended to help the Department, the College, and the University better fulfill their basic missions. This new home for the Department of Geology and Geophysics will become an essential part of the campus's north entry, a welcoming gateway for students and visitors.

The Sutton Building will be an attractive, modern building and will include a visually appealing and functional structure connecting the Sutton Building to the Browning Building. The link will play a vital role in creating a stimulating new image for the College of Mines and Earth Sciences. It will become the front door for the college and will serve as an outreach and recruiting tool for prospective faculty and students. The goal is for this connecting link to invite the public in to explore the world of geology and earth sciences presented in museum-like exhibits located in the main lobby. An 80-seat lecture hall will further enhance the Department's efforts to reach out to prospective students, faculty, and prominent guest lecturers.

Project Highlights

The new building will be flexible and adaptable so that it can be remodeled and reconfigured for future lab needs. It will have a clear exterior expression and simple internal wayfinding. Building systems will be exposed, where possible, so the building itself can serve as a learning laboratory. The new facility will include administrative areas, both for the College of Mines and Earth Sciences and for the Department of Geology and Geophysics. In addition, it will contain classrooms, teaching labs, centralized curation & storage, shared labs, support spaces and common building services.

In addition to new lab, classroom, and office spaces for the Department, replacement high-bay space for the large, specialized lab equipment associated with the current Ivor Thomas Ore Dressing Facility will be constructed on campus a few blocks to the east, adjacent to the Mining Systems Research Lab (Building 59) on Central Campus Drive. The existing Ivor Thomas Facility will then be razed to make way for the Sutton building.

The Sutton building (not including the remote high-bay space) will be approximately 91,000 gross square feet. The new remote high-bay space will be approximately 4,000 gross square feet. These areas are broken out as summarized in the following table:

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

EXECUTIVE SUMMARY

Area Summary	<u>Net Sq. Ft.</u>	
1. <u>Administrative Areas</u>		
A. College Of Mines & Earth Sciences Admin.	3,370	
B. Dept. Of Geology & Geophysics Admin.	<u>1,310</u>	
Subtotal—Administration	4,680	
2. <u>Areas Of Strength – Offices & Other Spaces</u>		
C. Internal Processes And Dynamics Of Earth	6,090	
D. U Of U Seismograph Stations (2,310 NSF Included in C, Above.)		
E. Surface Processes And Paleoclimate	3,200	
F. Water-Earth Systems	2,510	
G. Earth History And Paleobiology	1,340	
H. Earth Resources And Exploration	2,770	
11 Additional Grad Students (For 75 Total)	<u>550</u>	
Subtotal—Areas Of Strength	16,460	
Subtotal—Administration, Areas Of Strength Offices, USS, And Research Support Labs:	21,140	
3. <u>Support Areas</u>		
J. Sample Preparation Area	2,210	
K. Collections/Curation	4,330	
L. General Storage	2,400	
M. Common Areas	<u>4,380</u>	
Subtotal—Support Areas	13,320	
4. <u>Common Classrooms & Teaching Labs</u>		
N. Common Classrooms	3,700	
O. Teaching Labs	<u>4,200</u>	
Subtotal—Classrooms & Labs	7,900	
5. <u>Common Research Labs & Areas</u>		
P. Chemistry Group	5,520	
Q. Scope & Beam Group	2,340	
R. Materials & Mechanics Group	2,640	
S. Computer Research Group	<u>2,380</u>	
Subtotal—Common Research Labs & Areas	12,880	
Subtotal—Support Areas, Common Classrooms, Teaching Labs And Common Research Labs:	34,100	
Total Net Area—Sutton Building:	55,240	
Net/Gross Multiplier:	<u>x 1.63</u>	
Gross Area—Sutton Building:	90,041	GSF
Additional Gross Area For Lobby	<u>+1,000</u>	GSF
Total Gross Area—Sutton Building:	91,041	GSF
Ivor Thomas High Bay Lab Total Net Square Feet:	3,940	
To Obtain Gross, Add Area For Exterior Walls Only:	<u>+ 260</u>	
Total Gross Area—Ivor Thomas High Bay Lab:	+4,200	GSF
Grand Total—Entire Project:	95,241	GSF

Site

Site work for the project will include minimal work at the existing site, minor regrading, some minor utility extensions, and modifications to walks, landscaping, and irrigation in the areas immediately around the buildings (including the new high-bay lab). There is currently no funding for any related parking.

Interdisciplinary Science And Natural Resources

In keeping with important aspects of the Department's focus on interdisciplinary science dealing with natural resources and the processes that shape the Earth, the design of the new Sutton Building should reflect understanding of multiple disciplines in science and appreciation of natural resources. The building should tell something about what the Department stands for. For example, entry to the building will showcase how Earth Science interfaces with physics, chemistry, biology and the environment. The Department has also asked that the project prominently incorporate materials from the Earth such as stone or rock.

As a further expression of the values and professional interests of the members of the Department of Geology and Geophysics, the site and the building should also be designed to minimize impact on the environment, reduce the use of energy and natural resources, and lower life-cycle costs for building materials and systems. Although the University does not require the building to be LEEDTM certified, designers are expected to employ the same types of sustainable design strategies that would normally be used in order to qualify for LEEDTM certification.

Schedule/Budget

It is anticipated that design work will begin in April or early May 2005 and be completed within a year. Construction and personnel moves for this project will be phased as described in more detail elsewhere in the program. In order to eliminate multiple moves on the part of any labs or faculty members, the new Ivor Thomas Lab must be in operation before work begins on the Sutton building. Preliminary work packages for construction of the replacement lab and subsequent demolition of the existing Ivor Thomas Ore Dressing Facility will be issued before design work is finalized. Demolition of that building and construction of the Sutton Building should take approximately 18 months and should be complete in time for January 1st occupancy in the year 2008.

Construction cost for the project is expected to be just less than \$17 million in current dollars. As part of the design phase of the project, DFCM intends to hire a Construction Manager/General Contractor (CM/GC) to assist the design team in meeting the owner's budget, schedule, and constructability requirements. Conceptual construction cost and total project cost estimates are broken down as shown in the following table:

EXECUTIVE SUMMARY

Total Project Cost Summary

	<u>Gross Sq. Ft.</u>	<u>Est. Cost</u>
Ivor Thomas Building:	4,200	\$693,000
Sutton Building:	<u>91,041</u>	<u>\$12,733,076</u>
Subtotal:	95,241	\$13,426,076
General Conditions		\$805,565
Overhead & Profit		\$671,304
Design Contingency		<u>\$2,013,911</u>
Subtotal—Conceptual Estimate of Construction Costs:		\$16,916,856
Escalation		<u>\$969,591</u>
Total—Conceptual Estimate of Escalated Construction Costs:		\$17,886,447
Total—Conceptual Estimate of Soft Costs:		<u>\$4,549,578</u>
Grand Total—Conceptual Estimate of Total Project Costs:		\$22,436,025

Program Overview

The ensuing sections of the program document contain detailed program requirements. The program begins with the department's mission statement—together with a mission statement developed specifically for this project. Following the mission statement are observations about existing conditions and factors, goals, and recommendations for the site, for energy and resource conservation approaches, and for the new building. The program then presents a list of spaces to be included in the new building, followed by *Individual Space Outlines*—detailed summaries of the specific requirements of each individual type of space. The remaining sections include descriptions of concepts and criteria that will be important to the design team, including, for example, specific requirements and standards related to building and life-safety codes along with guidelines for lab design and structural, mechanical, and electrical engineering.

The program also includes a detailed conceptual cost estimate along with appendices containing recommended adjacency diagrams, a suggested schedule, and background documents related to site selection and the development of the proposed layout for the building.

3.0 MISSION STATEMENT

MISSION STATEMENT

The Frederick Alfred Sutton Geology and Geophysics Building will be the new home of the Department of Geology and Geophysics.

Department of Geology and Geophysics Mission

The new building will facilitate the Department's mission, which is:

1. To educate and prepare professional Earth scientists, geological engineers, and Earth science educators of the highest caliber.
2. To educate the University community and the public at large about the composition and structure of the Earth, the dynamic processes that shape the Earth, and the history and possible future of the Earth.
3. To engage in scholarly research activities in order to acquire new knowledge of the Earth.
4. To disseminate newly acquired knowledge via the timely publication of original research results by faculty and students.
5. To provide professional service by gathering and disseminating information regarding natural resources and geologic hazards.

These elements follow the mission of the University of Utah “to educate the individual and to discover, refine and disseminate knowledge”—through a threefold role as a teaching institution, a research university, and a contributor to public life.

The future success of the Department lies in student growth, in unifying the diverse interests and activities of its faculty and students, in facilitating cross-disciplinary interactions, and in increasing the public awareness of the Earth.

Gateway to the Campus, the College, and the Department

The Sutton Building creates new opportunities for the department by presenting a new face to the campus. For the University, it will provide a new dynamic entrance to the campus. The Sutton Building will serve as a community gateway not only to the University but also to the College of Mines and Earth Sciences and particularly to the Department of Geology and Geophysics.

The external design of the Sutton Building should showcase the exciting aspects of Earth science and convey the way Earth scientists' view the Earth as a teaching and research laboratory.

Inviting the Public In

The entrance to the Sutton Building will be seen by thousands of students, faculty, staff and campus visitors who pass each day. The new building should welcome interested University and community members to visit and to share the excitement of learning about the Earth environment.

MISSION STATEMENT

We expect the Sutton Building to be more than just another building on campus. It should be a lively academic and social gathering place. As a gateway to the north end of campus, the building should have a prominent entry structure that also serves as a gateway to the College and Department. This entry lobby or gateway might have plasma screens and displays that will educate about:

- Global and local news related to the Earth (e.g., earthquakes, volcanoes, floods, tsunamis, landslides),
- Current research results, and
- Information relating to class offerings, informal seminars, and other activities.

The gateway—with an adjacent lecture hall—will be the venue for college-related press conferences. It will also have striking and interactive electronic exhibits and contain attractive physical exhibits that can easily be changed.

This gateway should have coffee bar/café facilities where people could gather. This refreshment area can also serve as a gathering space for conferences, lectures and special events and would facilitate general student/faculty interactions.

Summary

The new Sutton building will help the Department, the College, and the University better fulfill their basic missions. This new home for the Department will become an essential building block of the campus's north entry, a gateway welcoming students to the University. The Department's goal is that it be a new front door for the College and for the Department, inviting the public, including prospective students, faculty, and staff, to come in, have a drink or snack, and explore the world of geology and earth sciences, dramatically presented in the exhilarating lobby, the educational exhibits, and the tiered lecture hall of the new Frederick Albert Sutton Geology and Geophysics Building.

4.0 SITE & LANDSCAPING

SITE & LANDSCAPING

Existing Conditions and Factors*Utilities*

Locations of existing utilities play a significant role in the recommended positioning of the building. Large water lines and high voltage electrical and telecommunications duct banks form the boundaries of the recommended site on the west/southwest and the east, respectively. It would not be feasible to relocate these utilities.

The water lines, old 22" and 36" diameter aqueducts belonging to Salt Lake City, run diagonally across campus in a south/southwesterly direction. Campus Design & Construction has indicated that the larger of these two aqueducts does not have shutoff valves and is probably constructed of clay brick. The difficulty of relocating these lines would be significant, and the cost would be prohibitive.

The electrical and telecommunications duct banks occupy the western edge of a campus-wide utility corridor that roughly corresponds with the group of pedestrian sidewalks that run north and south on the east side of the Browning and Ivor Thomas Buildings. These duct banks would also be very costly to move, and the project team has been specifically directed by Campus Design & Construction not to infringe on the utility corridor of which they are a part.

In addition, high temperature water and steam lines that would be difficult to move crisscross the area immediately south of the Browning Building. Smaller lines serving the Browning Building from the south could be relocated if necessary.

Slope

The ground at the proposed site slopes at least one story from east to west. This fact is apparent in the uphill (2nd floor) and downhill (1st Floor) entries to the Browning Building. The Sutton building may have to accommodate site slope greater than a full story, depending on its final floor-to-floor height. The natural slope will likely inform the building and site layout, including the location of public and service entries, new vehicle and circulation patterns, and locations of certain functions within the new building.

Pedestrian Circulation

As alluded to above, the Sutton Building site has a major campus pedestrian circulation route along its eastern edge. Three sidewalks form an important north-south axis through campus along the original 15th East right of way. As currently laid out, the easternmost pair of sidewalks is the more significant pedestrian and bicycle thoroughfare, since it continues directly on to the north, while the walk immediately east of the Browning Building and Sutton site dead-ends into 100 South. Site design of the Sutton project and its connecting link must address issues such as visibility and accessibility from Campus circulation routes—particularly the easternmost pair of walks. Based on the predominance of this pedestrian route, it appears that the front door of the building (or of the complex) should face east and connect with it.

Pedestrian circulation on the sidewalk along 100 South on the site's north boundary will increase with the Campus's proposed re-alignment of the 100 South crosswalk. The future crosswalk location is depicted in the site sketches included in Appendix 18.3. This new location suggests the possibility of a secondary entrance to the Sutton Building of some prominence. In addition, for access to the campus from the north, the building will form an important part of a new portal to the University from that direction. Since it will be a part of the threshold that students and faculty will cross on their way into the campus from the north, the image the Sutton Building portrays will be significant.

Minor circulation occurs and can be expected to occur in the future along the western edge of the site. It does not appear that this pedestrian traffic will be as significant as the pathways north, and particularly east, of the building.

SITE & LANDSCAPING

Finally, as far as the south edge of the new building site is concerned, the proposed link between the new and existing buildings will eliminate the possibility of any pedestrian through traffic along the south edge of the Sutton building (between the Sutton and Browning Buildings).

Vehicle Circulation

The Sutton site is bounded by 100 South on the north and 1460 East on the west. The buildings west of the Ivor Thomas Lab along 100 South generally maintain a uniform distance from the roadway. At the proposed site, the paving of 100 South jogs one full lane for the bus turnout, eliminating the park strip. The sidewalk along 100 South generally aligns with the blocks to the west of the site. It appears that the new building should be constructed with the same setback from the centerline of 100 South or from the sidewalk as the Mines Building and the other buildings along 100 South.

Although the current service and visitor parking access road along the western edge of the site (1460 East) may be eliminated, this road occupies the same general location as the large aqueducts discussed earlier. If this roadway is closed, future service access will come through a roadway between the Geoscience Services Building and the INSCC. To accommodate service traffic adequately when that happens, the roadway should be widened and the Geoscience Services Building removed.

To consolidate back-of-house functions, service access for the Sutton building should be along the western portion of its south side, colocated with the service area for the Browning Building.

It appears likely that future additional parking constructed by the university may be located in the area immediately west of the new building. This parking might make use of the same roadways used for service access.

Long Range Development Issues

In reviewing options for locating the building on the campus, we have also considered the following additional long-range development issues that may impact the site. Many of these issues are addressed in the University's Long Range Development Plan (LRDP). Although the impact will not be immediate, it will be significant later on, assuming development takes place according to the plan.

Future of Mines, GSS, ROTC: The Long Range Development Plan suggests that these building be demolished and replaced with a new building or more than likely a parking structure.

Future of Existing Entry from 100 South Between Mines & Ivor Thomas: As noted above, it is possible that vehicle traffic will be removed from the west edge of the building site. That eventuality could lead to increased pedestrian traffic in this area. Even if that does occur, however, it still does not appear that this pedestrian traffic will be as significant as the pathways north and east of the building.

Future of Wolcott/100 South/1460 East Intersection: The current plan indicates that this will be the future service entrance for the College of Mines and Earth Sciences. The LRDP shows this intersection being aligned on both sides of 100 South. First South would not continue directly east beyond this intersection, but be realigned. The pedestrian pathway going east would remain.

Future alignment of 100 South/North Campus Drive Curve: The LRDP includes the removal of the North Campus Drive 90° corner. Traffic will then be diverted at Wolcott, angling to the northeast behind the Kennecott Building to meet North Campus Drive just before it turns eastward.

Northern Campus Entry: This program and the LRDP recognize that the College of Mines & Earth Sciences will become an anchor for the Northern part of Campus, especially with any realignment of North Campus Drive. As a major part of the front door to this area of the Campus, the CMES buildings will become a defining feature of the north campus pedestrian zone.

Project Goals*Physical Connection:*

Bring the many parts of the college together in an integrated facility or cluster of buildings.

Recruitment and Retention:

Present an appealing face to prospective students and faculty members — physical connections between spaces that occur on several levels are important in helping to unite the college.

Landscaping:

Design landscaping that is sympathetic with and evocative of the materials and issues studied in the Department of Geology and Geophysics, including concepts of low water requirements.

Conserve Resources:

Demonstrate careful, prudent use of natural resources in site selection and design.

Minimizing Multiple Relocations:

Minimize the number of people and functions that will need to be relocated more than once.

High-Bay Space:

Create new high-bay space, to be known as the Ivor Thomas Lab, in a building attached to an existing building with shared infrastructure.

Recommendations

The College of Mines & Earth Sciences' objectives for the project have an effect on site selection. In considering site options, the working group has carefully considered how important goals—such as integrating the physical spaces used by the college, demonstrating careful stewardship over resources, and moving functions only once—impact available site choices.

The working committee recommends placing the Sutton Building north of Browning Building and the high-bay space adjacent to Building 59. The design team should evaluate the pros and cons of placing the high-bay space on the North (option E) or South end (option E₁) of Building 59. The University will make a final determination during design, taking into consideration input from the design team, CMES, and Facilities Planning.

Physical Connection:

A physical link should be constructed at ground level. In addition, links on stories other than ground level would add to cross-circulation opportunities between the varied CMES departments and resources in the Browning Building and the new Sutton Building.

Recruitment and Retention:

The creation of a physical link to the Browning Building and the development of attractive design and amenities for faculty and students will provide maximum opportunities for improved recruitment and

SITE & LANDSCAPING

retention as well as interaction and cross-pollination of ideas between students and faculty throughout the college.

Landscaping:

Recommendations include monumental rock displays, xeriscaping, rock mulch, and other examples of natural features. The resulting ambience should not be harsh—particularly in areas that may be used for routine exterior gathering, where softening with added greenery would be welcoming. Variety can also be achieved with selective use of rounded cobbles and boulders, which have a different aesthetic effect than angular rocks. It may be appropriate to redesign the rock displays on the east side of the Browning Building to create a unified overall site concept.

Landscaping strategies should be carefully coordinated with University of Utah grounds maintenance requirements. At the same time, they should go beyond just using rocks as resources for study, ground cover, features, and mulch. They should emphasize native and adapted plantings. They should facilitate ground water return, storm water runoff mitigation and other natural conservation-minded landscape design methods that reflect the goals of the College to use water and other natural resources responsibly. Other landscape features and approaches that should be considered include outdoor seating, shading of paved areas, and potential for small areas of landscaping, possibly in containers.

Minimizing Multiple Relocations

Many of the pieces of equipment used in research labs are very expensive to move. Doing it twice would expend funds needed for the new building and FF&E. Given the preferred Sutton building site, which requires demolition of the Ivor Thomas Ore Dressing Lab, special arrangements must be made for several pieces of equipment in that lab requiring high-bay space. If we are to avoid moving that equipment twice, provision must first be made for the required functions housed in that building before construction can begin on the new building.

High-Bay Space

As noted, special provision must be made for the existing Ivor Thomas Lab's ore dressing and other equipment that requires high-bay space. Equipment that requires more than 11 feet of clear space below the roof structure cannot feasibly be moved into any available existing College facilities. Accordingly, since the new Sutton building is to be located where the Ivor Thomas Lab currently sits, plans for the new facility must include new high-bay space. The space should be designed as an addition to Building 59, a location not affected by demolition of the Ivor Thomas Lab.

Phased Construction is recommended to create this separate high-bay space. The space must be constructed before the Ivor Thomas Lab is vacated. Accordingly, construction will require at least two phases, with completion of the high bay space followed by relocation of necessary functions out of the Ivor Thomas Lab, demolition of that structure, and commencement of construction on the Sutton Building. See Section 13, "Schedule and Phasing," for more detailed recommendations on how this can be accomplished.

**5.0 ENERGY, ENVIRONMENTAL, AND RESOURCE
CONSERVATION**

Existing Conditions and Factors

Currently, the College of Mines and Earth Sciences is housed in parts of several different buildings on campus. Many of these buildings are old and have poor environmental and energy performance. In addition to benefiting both faculty and students, the new Sutton Building should provide an opportunity for the University to become a more sustainable campus.

Project Goals

The new Sutton building should be designed to minimize its impact on the environment, reduce the use of energy and natural resources, and lower life-cycle costs for building materials and systems. Although the University has decided not to require LEED™ certification for this building, they have asked that the building incorporate principles of sustainability, environmental quality, resource conservation, and energy efficiency. The option of LEED™ certification, together with associated benefits and compliance certification costs, may be re-evaluated during design.

Recommendations

The following are concepts recommended to the building designers by the working committee for consideration in order to achieve these goals. Most of the concepts and the order in which they are arranged are loosely based on the LEED™ checklist.

Sensible Site Development

- Provision for travel to and from the building by bicycle, including secure bicycle storage spaces for approximately 25 bicycles, and at least one shower for each sex. (See sections U and V of the individual space outlines for specifics.)
- No new parking.
- Storm water management through detention on site (but not on roof).
- Light colored paving and roofing.
- Trees to shade paved areas.
- Site lighting with no up-light component.

Water Conservation

- High-efficiency landscape irrigation technology.
- Drought-tolerant plantings with establishment irrigation only where possible.
- Reduced flows at faucets and showers—below EPA requirements.

Energy and Environmental Conservation

- Non-CFC refrigerants.
- Passive solar design.
- Optimum solar orientation and aspect ratio.
- Automatic dimming of electric lights tied to daylight sensors.
- Reduced ambient light levels with supplemental task lights (50 fc @ labs, 25 fc @ offices, 25 fc in computer rooms and computer labs).
- Occupant sensors.
- High-efficiency motors.
- Variable frequency drives.
- Direct/indirect evaporative cooling.
- Possibility of natural ventilation.

ENERGY, ENVIRONMENTAL, AND RESOURCE CONSERVATION

Renewable and Responsible Materials

- Storage and collection of recyclables.
- Construction waste management—more than half of construction salvaged or recycled.
- Recycled content of construction materials—as much as possible.
- Local/regional materials—to minimize transportation impacts—as much as possible.
- Rapidly-renewable materials in such areas as flooring or millwork in appropriate places.

High-Quality Indoor Environment

- Carbon-dioxide monitoring in areas beyond minimum standard practice.
- Contractor indoor air quality management plan.
- Two-week post-construction building flush-out.
- Low-VOC adhesives, sealers, paints, and coatings.
- Carpet, pad, and adhesive systems that minimize off-gassing.
- Wood and natural products without ureaformaldehyde resins.
- Possibility of operable windows in some areas.
- Useable daylight in as many occupied spaces as possible.
- Access to views from as many occupied spaces as possible.

Innovation

- Education/outreach regarding energy and environmental issues for building visitors.
- Energy, environmental, and resource conservation measures exposed to view where possible and documented with interpretive materials as a part of the building's learning laboratory function.

Solar Orientation

The building should be oriented and shaped in a way that will take advantage of natural light but will minimize solar heat gain.

A building elongated in the east-west direction will have more glazing facing north and south than east and west. Such an arrangement is beneficial because sunlight striking south- and north-facing windows is easily controlled, allowing the visible light to supplement artificial light, thereby reducing cooling loads.

Optimizing the building's aspect ratio, or the ratio of the building's length to its width can enhance the benefits of orienting the building with its longer dimension running east to west.

The aspect ratio of the building is important to the energy performance of the building because, in a relatively narrow building (high aspect ratio), daylight can penetrate virtually the full depth of the useable space outside the core from both the north and the south, thereby reducing cooling loads due to artificial lighting.

A large aspect ratio takes advantage of the sun-control difference of windows facing different directions discussed above; even if the glazing pattern is consistent on all façades, the building will have a substantially greater amount of north- and south-facing glass in proportion to east- and west-facing glass, thereby reducing heat gain from the latter.

In every project, the building site influences the opportunity for advantageous solar orientation and the potential for an appropriate aspect ratio. Fortunately in this project, the proposed site appears to have the advantage of allowing both efficient solar orientation and a beneficial aspect ratio for the building.

6.0 BUILDING

BUILDING

Existing Conditions and Factors

The College of Mines and Earth Sciences has been located in many different buildings over its history. The future occupants of the Sutton Building—Department of Geology and Geophysics personnel mostly—currently have offices and labs in at least three buildings—the Browning Building, the Mines Building, the Geosciences Services Building (attached to the south end of the Mines Building), and INSCC. The Browning building was constructed in 1971. The first part of the Mines building was built in the 1920's with an addition and then the Geosciences Services Building being added in the decades following. INSCC was built within the past ten years. In addition, the original Ore Dressing Facility was built in the 1940's.

Many of the buildings currently in use—particularly the Mines Building and the Geoscience Services Building—are in poor condition and are thus not conducive to many parts of the College's mission, particularly the goal of attracting and retaining quality faculty and students.

Being spread out across several marginal facilities has also hampered the College's effectiveness. The situation used to be worse than it is today. Over the past several years, the College has moved out of many of the buildings where it previously had a presence. In some instances, this has been due to the expansion of other colleges that had been sharing the facilities. In others, the moves have been made in an attempt to bring the various parts of the College closer together.

In 1998, the State retained Brixen & Christopher Architects to review the physical accommodations of the College as a whole and prepare a master plan for future development. The ensuing report recommended consolidating the College's functions—to the greatest extent possible—in the existing Browning Building and a new structure to be located nearby.

Earlier this year, the State selected the team of Cooper Roberts Simonsen Architecture and Brixen & Christopher Architects to develop a program for the design and construction of the Frederick Albert Sutton Geology & Geophysics Building. This building, envisioned to be approximately ninety-one thousand square-feet in size, will realize the major recommendation of the earlier master plan.

Project Goals*Modern Building:*

Create a modern building unlike where the students, faculty, and staff of the Department of Geology and Geophysics are currently housed.

Linked

Build a consolidated complex in which virtually the entire College will be housed.

Interactive

Construct an integrated setting, bringing together the departments within the College of Mines and Earth Sciences.

Open and Accessible

Design the new building to be as open and accessible as possible. Besides being accessible for the purposes of scholarly pursuits, the building must be open in every way for visitors, students, staff, and faculty with specific accessibility needs.

BUILDING

Outreach

The new building is an important tool to attract and retain prospective students and faculty. To do so, it must be visually and intellectually appealing and stimulating, both inside and out. It must reflect the close ties of the professions housed within to the physical environments that stimulate teaching and research. The link between the new building and the Browning Building, as described in subsequent sections, will help make these connections a reality.

Recommendations

Modern Building:

The new building should incorporate the latest building materials, construction techniques, and design thinking for modern research and instruction laboratories, classrooms, and office spaces.

Linked

This program calls for the new structure to be built north of the Browning Building, with a physical connection between the two. Consolidating the College into a single campus made up of two interconnected buildings will be done with the intent to unify the group into a single entity that can accomplish the mission of the College more effectively.

Interactive

The program recommends space that encourages and supports interaction between students and faculty across broad and diverse ranges of experience, interest, and ability. Such interactions allow for cross-pollination of ideas and serendipitous exchanges that foster unexpected learning opportunities and creative problem solving.

Open and Accessible

To further allow spaces to flow together unimpeded, labs should be connected within larger open areas without walls wherever possible. Visual connections between corridors and labs will allow passers-by a degree of visual access to what is going on in laboratories that far exceeds what would be apparent behind solid walls and closed doors. Visual connectivity will provide valuable opportunities for unscripted insights and unexpected educational and intellectual connections and recombinations that are at the heart of scientific and creative processes.

Accessibility measures must meet or exceed ADA and ANSI requirements. One area, for example, where building designers should consider exceeding accessibility regulations would be in the tiered lecture hall. Even though not required for a hall of this size, it would still be preferable to provide an accessible route to at least two different seating areas so that students in wheel chairs have a choice of where to sit.

Outreach

One way to create healthful, productive spaces to which occupants and visitors will wish to return is to make maximum use of natural daylight—reflected deep into both the link and the new building. Effective use of daylight, in combination with many other green-building measures, will have a profound effect on the performance and well-being of building occupants. See the discussion of these topics under *Energy, Environmental, and Resource Conservation* in the preceding section of this program.

In order to make the building part of an effective outreach program, the designers can do many things in addition to making the building as sustainable as possible. Some of these things include the following recommendations:

- The design should be easy to understand;
- Wayfinding should be clear and consistent;
- The main entry should be readily apparent;
- The shapes and components should have pleasing and consistent proportions;
- The details and features should be universally recognizable;
- The exterior massing and materials should respect the surrounding buildings and the University environment; and
- The choice of interior and exterior materials should reflect something about the Department of Geology and Geophysics.

ADDITIONAL RECOMMENDATIONS:

Floor Plan Recommendations

In the process of researching and preparing the program for the new Sutton Building, we have developed the following general floor plan recommendations:

100 to 110 foot bay width

In thinking about a generic floor plan arrangement, we considered first the maximum depth both of typical labs and of usable daylight penetration, which turn out to be relatively similar—somewhere between 25 and 35 feet. We also considered that windows are always at a premium and should be reserved for labs and offices (and possibly some classrooms). Certain labs as well as support and building core spaces would be more appropriately at the building center, away from windows. These considerations suggested layout concepts with a bay width of approximately 100 to 110 feet as discussed in detail in Appendix 18.4.

Site, as well as energy considerations described earlier, suggest that the building be elongated in the east-west direction. Labs and offices should then be arrayed along the long north and south walls to maximize exposure to daylight.

Lab Module

We recommend that most labs be laid out based on the module described in Section 9.0 of this program, entitled “Modular Lab Concept.”

Column Spacing

Column spacing should be related to the modular layout concept. The structural module should align with the lab module. See the structural section of this report (Section 14) for specific recommendations for column spacing.

Four or Five Stories

In our conceptual code analysis (see Section 11, Code Analysis for details), we have used construction type II-B as a starting point, in order to keep construction costs within reason while still providing a building whose structure consists of durable, non-combustible materials. The building should be fully sprinklered, and the code allows a building of this construction type with this occupancy to be a maximum of five stories high. A basement, if used, would not count as one of the allowed stories. (This program does not anticipate a basement) A height of four or five stories suggests a floor plate size that works well with the recommended site.

BUILDING

20,000 to 25,000 s.f. Floor Plates

The available area on the recommended site allows for floor plates of 20,000 to 25,000 square feet for the main portion of the Sutton Building. The floor plate for the link to the Browning Building might be as much as 3,000 s.f. These floor plates will accommodate reasonably efficient internal circulation and a favorable aspect ratio for good energy performance. In addition, floor plates in this range will allow the desired amount of area to be constructed within the number of stories permitted. It appears that the site is not quite large enough for floor plates that would allow the building to be only three stories. In addition, floor plates approaching 30,000 s.f. tend to become somewhat inefficient and can reduce the number of occupants with access to daylight and views to the exterior.

Collection Storage on Grade

The department collects, analyzes, and especially stores many tons of geological samples. In researching the requirements of this building, one of the first things that became obvious to the programming team was that these collections and specimens could be gathered into a central location on the ground floor (on grade) of the building in order to minimize structural costs to carry these heavy loads on upper floors with suspended slabs. Based on our conversations with faculty members who deal with these collections, a central storage repository on grade will have widespread support. Bulky storage that clutters labs and offices will be removed and relocated to a more convenient location. Small areas with limited collection storage should be provided throughout the building.

Architectural Expression Recommendations

Link to the Browning Building

The link between the new Sutton Building and the Browning Building will play a vital role in creating a stimulating new image for the College of Mines and Earth Sciences. The link should become the new front door for the College. It should have a clear sense of entry and should be visually interesting and appealing.

The link building will include common areas that serve faculty, staff, students, and the general public. These areas will include a lobby, display and exhibit areas, access to the Dean's Office, and possibly a lecture hall. In addition, the Seismograph Stations' Earthquake Information Center should be located within the link. That center, intended to function as a clearinghouse for information and news dissemination after a seismic event, must be able to interface with the public and news media. Seismic drum recorders may play a prominent role along with other exhibits in the public display area. If, as part of a future project, the Old Mines building is demolished, this display area might also be the appropriate location for an exhibit about that building's early service as the home of the Department of Mining and Metallurgical Engineering.

The lobby and the adjacent public display areas should have the look and feel of a museum. They should become a destination for visitors—something that will draw people in to learn more about the College of Mines and Earth Sciences, about what it does, and about its latest research. This part of the building is intended to become a recruiting tool for visiting students and prospective faculty members.

The new Sutton Building and the connecting building should be designed so that the floor you enter on the east is at the same elevation in the Sutton Building, the Link, and in the Browning Building. Unfortunately, aligning the floor levels of both buildings directly on more than one level will not be possible. The Sutton Building should be designed with 15'-0" floor-to-floor levels to allow maximum flexibility for running lab utilities and ductwork. The Browning Building, however, has about two feet less floor-to-floor height than that. Besides the entry level from the east (level 2 in both buildings), it will likely only be possible to connect one floor above and one below, resulting in three connected levels. Wherever floors of differing

elevation are linked, the designer should include ramps to ensure that the pathway between the two buildings includes an accessible route.

Connections between floors should be as open as possible. The connector should offer an open atmosphere, perhaps an open shell like a grand hotel lobby, with skywalks in the interior. The overall design should allow the connector to be used as a reception area for large groups—alumni reunions, award receptions, etc.—with open space to allow communication between different levels of the interior structure. There should be space within the connector for catered concessions such as coffee and pastries, and space for a wet bar area for receptions. Since this connector will be the main face of the north end of campus, this connector should draw people entering campus from parking areas north of 100 South and the bus stops on 100 South.

Exterior Expression—Image

The exterior expression of the building should reflect a safe, clean, comfortable, functional, accessible, and aesthetically pleasing environment. The Sutton Building must create a synergy with the existing Browning Building as well as surrounding campus buildings. This building must create the necessary linkages, physical, visual and virtual.

The new building will provide a new formal entrance to the College of Mines and Earth Sciences. This entrance as well as the building image will be designed to provide a new identity for the College, redefining the important corner of campus, reinforcing the nexus of the north quadrant of the University campus and expanding the influence of the U of U Geology and Geophysics Department on the state and national level.

Material selection is of utmost importance. The Sutton Building represents a significant financial and professional investment. With this in mind, the materials must be durable while creating an attractive environment that will stand for future generations. Using sophisticated material and color palettes that provide a quality environmental design and will not become dated is essential.

The Sutton Building needs to be a reflection of the Geology and Geophysics Department and the natural environment the building resides in. This new building should be a complement to University of Utah rather than an imposition on it. This singular facility will—by design—be a functional and aesthetic part of the greater community of the University.

One way of relaying the importance of the facility to the community is by making it visually accessible from the street. Using transparent materials to reveal the activities and functions of the building creates excitement and a sense of welcome to people passing by. This transparency, however, should be carefully designed to minimize glare to the interior and degradation to the elements housed within through the use of spectrally selective glazing, shading elements and thoughtful solar and view orientations.

Outdoor program areas should be incorporated into the exterior expression of the building taking advantage of the site setting on the campus. Exterior gathering spaces will provide multi-purpose areas as well as an additional display area to showcase the collections of the Geology and Geophysics Department.

Interior Environment

Flexibility is essential. The new Sutton Building will allow for future program and functional changes and will accommodate advances in information and building technologies. This will require flexible and accessible building ceilings, floors and walls, as well as providing adaptable/adjustable lighting and acoustical design to support multiple or future uses.

Flexibility is not just about technology. It is advantageous to consider large, open spaces wherever possible. This will allow the building to use interior design to expand or contract areas, as the future needs

BUILDING

of the building shift. It is important to create an interior space plan that encourages interaction and allows research and teaching to operate at maximum efficiency.

Creating adaptable spaces that use “open architecture” for data, power, and utility delivery will increase the efficiency of the building. These types of systems accommodate ever-changing technology allowing cabling, utility, and HVAC systems to be reorganized and serviced with ease.

Lighting and acoustics are important features of any interior environment. Well-designed daylighting strategies will reduce energy usage and enhance the visual and physical environment. Glare-free natural light should enlighten the space. Acoustics will support the activities, whether they involve research, teaching, quiet reading, or sensitive laboratory measurements. All areas should be comfortable, supportive, and simple to operate and maintain.

Additionally, furniture should be selected or designed appropriate to its function and constructed of materials that give them long life and enduring appeal. Finish materials should be warm, sustainable (to the greatest extent possible), and easily maintained.

Part of the interior environment of the Sutton Building will be an area to present collections with student and patron interaction in mind. We need to capitalize on the extensive collections the Geology and Geophysics Department has to offer and make sure they can be showcased in the future.

Wayfinding and Circulation

Providing a distinct new formal entrance to the college will eliminate the confusion created by the lack of a front door to the college. This new front door is an important element in wayfinding and circulation systems providing the connection with the Browning Building. This connection needs careful consideration and must be planned as part of the circulation system of the entire building.

Once inside, students and faculty should be part of a clean, functional and attractive environment. Wayfinding should be clear with logical spatial adjacencies and direct corridors to assist in visual orientation. A variety of spaces should be provided to allow for different space types and intellectual engagement. In addition, the circulation around the building should enhance local and campus vehicular and pedestrian connections.

Building as Laboratory

The new building will offer students, as well as the general public, an introduction to the many architectural and engineering principles that shape a contemporary laboratory building. Unique approaches in the design will highlight the building and its functional systems (structural, power, HVAC, fire protection, water/wastewater, telecommunications, computer networks, etc.) as part of the laboratory learning experience for the students. Designers should expose and organize these systems in a way that clearly expresses how these complex systems make a building function. Exposing all of these building systems will create a strong interior aesthetic that will differ from the more typical interior finishes used in the Browning Building.

Building Systems

Criteria for laboratory, structural, mechanical, plumbing, and electrical systems are covered in detail in separate sections of this program document.

SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

7.0 SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

NOTE: LIST ORDER DOES NOT NECESSARILY IMPLY ADJACENCIES

SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

1. ADMINISTRATIVE AREAS

	<u>Net Sq. Ft. In Sutton</u>
A. College of Mines & Earth Sciences Administration	
1. Dean Office_____	250
2. Associate Dean Office_____	160
3. Executive Assistant_____	100
4. Executive Secretary area_____	100
5. Part time clerical_____	50
6. Accountant_____	100
7. Reception area for 6-8 visitors_____	200
8. Filing Area or Room_____	150
9. Copy/Mail Room_____	150
10. Break Area with kitchenette_____	100
11. Conference Room for 12-16_____	280
12. Development Office_____	160
13. Computer Systems Office Area_____	600
14. Computer Systems Work Area_____	150
15. Computer Room (College)_____	300
16. Computer Room (UUSS)_____	400
17. Computer Room Storage (UUSS)_____	120
	3,370

	<u>Net Sq. Ft. In Sutton</u>
B. Dept. of Geology & Geophysics Administration	
1. Chair Office_____	200
2. Administrative Assistant_____	100
3. Accountant_____	100
4. Work space for future accounting and recruiters_____	50
5. Reception Area_____	100
6. Administrative Officer_____	100
7. Academic Counselor/Support Coordinator_____	100
7a. Thesis Library_____	60
8. Filing Area or Room_____	150
9. Storage Area_____	100
10. Copy/Mail Room_____	150
11. Break Area with kitchenette_____	100
	1,310

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

2. AREAS OF STRENGTH – OFFICES & OTHER SPACES

	<u>Net Sq. Ft. In Sutton</u>	
C. Internal Processes and Dynamics of the Earth		
1. John Bartley	160	
2. John Bowman	160	
3. Sue Halgedahl	160	
4. Barbara Nash	160	
5. Bob Smith	160	
6. Rich Jarrard	160	
7. Rob Harris	160	
8. Emeritus Office	160	
9. Post Docs – 4	320	
10. Upper Level Graduate Students – 10	500	
11. Research Support Labs – 6 @ 160	960	
12. Lab Tech, Engineers (3, including UUSS)	240	
13. UUSS Seismic Network Work Area	320	
14. Field Engineer/Technicians	160	
15. Seismograph Stations – (see detail in D. below)	2,310	
	6,090	
	<u>Net Sq. Ft. In Sutton</u>	
D. U of U Seismograph Stations (part of C. above)		
1. Walter Arabasz	160	
2. Jim Pechman	160	
3. Kris Pankow	160	
4. Seismic Network Manager Office	160	
5. Hardware/Software Engineer	100	
6. Earthquake Information Center and Response Room	400	} Earthquake Information Center Area
7. Earthquake Information Specialist (2)	160	
8. Technical Assistants (2 grad students)	100	
9. Group Work Area	200	
10. Library/Conference Room	250	
11. Administration Office (2 people)	200	
12. Administration filing and storage	100	
13. Staff Office	160	
14. Bulk Storage (Archived)		
	2,310	

(Note: this space is accounted for under **C. Internal Processes & Dynamics of the Earth** and should not be counted twice)

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

	<u>Net Sq. Ft. In Sutton</u>
E. Surface Processes and Paleoclimate	
1. Frank Brown	160
2. Ron Bruhn	160
3. Margie Chan	160
4. David Chapman	160
5. Cari Johnson	160
6. David Dinter	160
7. Emeritus Office	160
8. Post Docs – 3	240
9. Upper Level Graduate Students – 16	800
10. Research Support Labs – 6 @ 160	960
11. Lab Tech	80
	3,200
F. Water-Earth Systems	
1. Thure Cerling	160
2. Paul Jewell	160
3. Bill Johnson	160
4. Kip Solomon	160
5. Bill Parry (Emeritus)	160
6. Post Docs – 3	240
7. Upper Level Graduate Students – 15	750
8. Research Support Labs – 4 @ 160	640
9. Lab Tech	80
	2,510
G. Earth History and Paleobiology	
1. Tony Ekdale	160
2. Peter Roth	160
3. Scott Sampson - Labs in Museum of Natural History	160
4. Duke Picard (Emeritus)	160
5. Upper Level Graduate Students – 6	300
6. Research Support Labs – 2 @ 160	320
7. Lab Tech	80
	1,340
H. Earth Resources and Exploration	
1. Eric Peterson	160
2. Jerry Schuster	160
3. Fulvio Tonon	160
4. Michael Zhdanov	160
5. Nicolay Golubev	160
6. Post Docs – 6	480
7. Upper Level Graduate Students – 17	850
8. Research Support Labs – 4 @ 160	640
	2,770

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE**SUMMARY OF ADMINISTRATION, AREAS OF STRENGTH OFFICES, UUSS, and RESEARCH SUPPORT LABS**

A	COLLEGE OF MINES & EARTH SCIENCES ADMIN.	3,370
B.	DEPT. OF GEOLOGY & GEOPHYSICS ADMIN.	1,310
C.&D.	INTERNAL PROCESSES AND	
	DYNAMICS OF THE EARTH (including UUSS)	6,090
E.	SURFACE PROCESSES AND PALEOCLIMATE	3,200
F.	WATER-EARTH SYSTEMS	2,510
G.	EARTH HISTORY AND PALEOBIOLOGY	1,340
H.	EARTH RESOURCES AND EXPLORATION	2,770
	11 Additional Grad Students (to reach 75 total)	550
TOTAL:		21,140 Net S.F.

SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

3. SUPPORT AREAS

	<u>Net Sq. Ft. In Sutton</u>
J. Sample Preparation Area	
1. Sample Prep Area	200
2. Trim Saws	150
3. Polishing Room	150
4. Office Area	80
5. Slabbing Room	250
6. Crushing Room	300
7. Student Work Space	80
8. Heavy Liquids Separation	160
9. Frantzing Room	150
10. Water Prep. & Processing for Hydro. & Environmental Research (incl. cold storage)	690
	2,210
K. Collections/Curation	
1. Fossils	600
2. Rocks & Minerals	600
3. Paleo Collections	700
4. Sedimentary/Carbonate Collections	200
5. Staging Area/Class Set-Up	500
6. Mineral Collection/Work Area	600
7. Chemical Work Space/Sample Prep	300
8. Curation Office	80
9. Rock Splitting/Sandblasting	100
10. Curation Equipment Storage	300
11. Map Storage Room	300
12. Radioactive Storage	50
	4,330

Note: High density compact storage systems for collections
are planned for Sutton Bldg.

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

	<u>Net Sq. Ft. In Sutton</u>	
L. General Storage		
1. Dark room (remains in WBB)		
2. Field Equipment (Seismology)	500	
3. Field Equipment (Electromagnetics)	160	
4. Geol. Engr. Equipment	500	
5. General Equipment Bulk Storage	600	
6. Field Equipment (UUSS)	400	
7. Transition Storage (UUSS)	240	
	2,400	
M. Common Areas		
1. Student/Faculty Mtg. Room w/Kitchenette	550	
2. Geology SAC Area	200	
3. Student Computer Lab	700	
4. Computer Extension Room (adj. to Computer Lab)	80	
5. Small Conference Room for 12-15	250	} colocated w/moveable partition between
6. Small Seminar/Conference Room for 12-15	250	
7. Informal Meeting Areas (3)	250	
8. Media/Display/Exhibit Area (UUSS)	250	
9. Common Display/Museum/Exhibit Area near lobby	1,250	
10. Common Fabrication Workshop Area (UUSS & G/G)	600	
	4,380	

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

4. COMMON CLASSROOMS & TEACHING LABS

	<u>Net Sq. Ft. In Sutton</u>
N. Common Classrooms	
1. Flexible Classroom for 30 (2 @ 750)	1,500
2. Flexible Classroom for 40	1,000
3. Fixed Lecture Hall for 80	1,200
	3,700

	<u>Net Sq. Ft. In Sutton</u>
O. Teaching Labs	
1. Geotechnical Engineering & Hydrology	600
2. Mineral & Petrology (2 spaces @ 600)	1,200
3. Optics	900
4. Paleontology & Sedimentary Geology	750
5. GIS/Visualization, Natural Disasters, Computer Layout	750
	4,200

SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

5. COMMON RESEARCH LABS & AREAS

(Lab Tech for each group is shown in Areas of Strength)

	<u>Net Sq. Ft. In Sutton</u>
P. Chemistry Group	
1. ICP-MS-Radiogenic Isotopes Clean Room Lab_____	640
2. Wet Chemistry Prep Lab_____	460
3. Stable Isotope Lab_____	620
4. XRF & XRD Lab_____	500
5. Igneous Petrology Lab_____	320
6. Geochemistry Lab_____	640
7. HPLC-GC-TOC Lab_____	640
8. Microbiology Lab_____	460
9. Noble Gas Lab_____	920
10. CFC Lab_____	320
GROUP:	5,520
Q. Scope & Beam Group	
1. Microprobe_____	500
2. Microscope Labs_____	800
3. TIRF Lab_____	320
4. Atomic Force Microscope Lab_____	320
5. Ore Petrology Research Lab_____	240
6. Fluid Inclusion Lab_____	160
GROUP:	2,340
R. Materials & Mechanics Group	
1. Structure Deformation Lab_____	400
2. Sedimentary Geology Lab_____	400
3. Thermal Conductivity Lab_____	160
4. Fluid Dynamics Lab_____	320
5. Paleo Lab_____	400
6. Multipurpose Map Lab_____	320
7. Paleoclimate Lab_____	320
8. Electrical Conductivity Research Lab_____	320
9. Magnetism Lab (remains in WBB – according to Dean)	
11. Scientific Drilling Lab (remains in WBB – according to Dean)	
12. Rock Mechanics Lab (move to WBB – according to Dean)_____	
GROUP:	2,640
S. Computer Research Group	
1. Earthquake Seismology/Crustal Deformation Lab_____	620
2. Yellowstone Volcanic Observatory_____	160
3. Thermal Geophysics Lab_____	320
4. Sedimentary Geo/Basins Lab_____	320
5. Tomography Computer Lab_____	320
6. Electromagnetic Computer Lab_____	320
7. Structure Modeling GIS Computer Lab_____	320
GROUP:	2,380

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

TOTAL RESEARCH LABS: 12,880

**SUMMARY OF SUPPORT AREAS, COMMON CLASSROOMS,
TEACHING LABS AND COMMON RESEARCH LABS**

J.	SAMPLE PREPARATION_____	2,210
K.	COLLECTION/CURATION_____	4,330
L.	GENERAL STORAGE_____	2,400
M.	COMMON AREAS_____	4,340
N.	COMMON CLASSROOMS_____	3,700
O.	TEACHING LABS_____	4,200
P.	}	
Q.		
R.		
S.		
	RESEARCH LABS_____	<u>12,880</u>

TOTAL: 34,100

SEE SECTION T FOR SUMMARY OF OFFICES ONLY

TOTAL SUTTON BUILDING W/O CENTERS & INITIATIVES = 55,240 SF NET

CENTERS & INITIATIVES (*LTHO, WEST, CWECS, EARTHSCOPE*)

TOTAL = 1,800 SF add to Sutton Building

TOTAL SUTTON BUILDING W/CENTERS & INITIATIVES = 57,040 SF NET

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

SUMMARY OF PROPOSED SPACES AND SQUARE FOOTAGE

BUILDING AREA SUMMARY

Total Net Square Feet of Programmed Space in Sutton Building

Administration Areas of Strength Offices, UUSS and Research Support Labs:	21,140 NSF
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Support Areas, Common Classrooms, Teaching Labs, and Common Research Labs:	34,100 NSF
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TOTAL SUTTON BLDG. (INCL. CONNECTOR LINK):	55,240 NSF
Net/Gross Multiplier:	<u>1.63</u>
Sutton Total Gross Area	90,041 GSF
Additional Gross Area for Lobby	<u>1,000</u> GSF
SUTTON BLDG. TOTAL GROSS:	91,041 GSF

Total Net Square Feet of Programmed Space in Ivor Thomas High Bay Lab:	3,940 NSF
Add for Bldg. Structure (Bldg. is one single space):	<u>260</u> SF
IVOR THOMAS HIGH BAY TOTAL GROSS:	4,200 SF

TOTAL PROJECT:	95,241 GSF
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If Center & Initiatives are added: (1,800 NSF additional)

Sutton Building:	57,040 NSF
Net/Gross Multiplier:	<u>1.63</u>

	92,975 GSF
Additional Gross Area for Lobby	<u>1,000</u>
	93,975
Ivor Thomas High Bay Gross	<u>4,200</u>

TOTAL PROJECT (w/Centers & Initiatives):	98,175 GSF
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8.0 INDIVIDUAL SPACE OUTLINES

- 8.1 ADMINISTRATIVE AREAS**
- 8.2 AREAS OF STRENGTH**
- 8.3 SUPPORT AREAS**
- 8.4 COMMON CLASSROOMS & TEACHING LABS**
- 8.5 COMMON RESEARCH LABS & AREAS**
- 8.6 TYPICAL OFFICES, RESEARCH SUPPORT LABS, ETC.**
- 8.7 PUBLIC SPACE & BUILDING SERVICES**
- 8.8 IVOR THOMAS HIGH BAY SPACE**
- 8.9 OTHER SPACES REQUIRED TO BE RELOCATED**

INDIVIDUAL SPACE OUTLINE

NOMENCLATURE:

- If of shelves (or shelving) means total shelf length of adjustable wall mounted shelves on brackets, i.e. 7 shelves, 10' long = 70 lf of shelves.
- Cabinet means millwork cabinetry with doors and shelves inside, unless otherwise indicated.
- Wall or overhead cabinet means cupboard type cabinets mounted on wall with doors, unless otherwise indicated.
- Base cabinets include plastic laminate counter tops unless indicated to receive lab tops or some other kind of counter top.
- Where "by Owner" is listed in the space outlines (or elsewhere), it refers to equipment to be provided by the College or the Department. This may include existing equipment brought from their existing spaces, new equipment purchased with the FF&E package, or equipment purchased in the future with research grants.
- All items listed under "MOVEABLE FURNISHINGS AND EQUIPMENT" are assumed NOT to be included as a part of the construction budget.

8.1 ADMINISTRATIVE AREAS

INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A

	<u>Net Square Feet</u>
A. College of Mines & Earth Sciences Administration	
1. Dean Office_____	250
2. Associate Dean Office_____	160
3. Executive Assistant_____	100
4. Executive Secretary area_____	100
5. Part time clerical_____	50
6. Accountant_____	100
7. Reception area for 6-8 visitors_____	200
8. Filing Area or Room_____	150
9. Copy/Mail Room_____	150
10. Break Area with kitchenette_____	100
11. Conference Room for 12-16_____	280
12. Development Office_____	160
13. Computer Systems Office Area_____	600
14. Computer Systems Work Area_____	150
15. Computer Room (College)_____	300
16. Computer Room (UUSS)_____	400
17. Computer Room Storage (UUSS)_____	120
	3,370

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-1 Dean's Office 250 s.f.

A-1

SPACE QUANTITY: 1 private office

FUNCTION

- Provide work space to support the administrative functions of faculty member serving as Dean of the College.
- Accommodate conferences, interviews, personal library, computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 6 Visitors

DESIRABLE ADJACENCY

- Within College Admin area
- Adjacent to Exec. Assistant
- Near College Conference Room
- Accessible to students and faculty

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 120 lf of bookshelves
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 36"x72" desk with 42" computer return (with adjustable keyboard support)
- 72" credenza or computer table (or equivalent office system)
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (6) guest chairs
- 48" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at three locations

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-2 Associate Dean's Office 160 s.f.

A-2

SPACE QUANTITY: 1 private office

FUNCTION

- Provide work space to support the administrative functions of faculty member serving as Associate Dean.
- If there is no Associate Dean, to provide an office for visiting faculty.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2

DESIRABLE ADJACENCY

- Near College Executive Secretary
- Near College Conference room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 100 lf of bookshelves
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer table (or equivalent office system)
- 4 - high 42" wide lateral file
- Ergonomic desk chair
- (3) guest chairs
- 36" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

A-3 Executive Assistant to the Dean 100 s.f.**A-3**

SPACE QUANTITY: 1 (semi-private open office)

FUNCTION

- Accommodate administrative and other functions in support of the Dean.
- Support computer use and necessary storage of file materials.
- Scheduling of the Dean's activities.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Adjacent to Dean's Office with direct access
- Near Executive Secretary and Reception area
- Buffer between Reception area and Dean

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- STC 40-45 within a semi-private environment

SECURITY

- Ability to lock work station or office with keyed lock

FIXED EQUIPMENT

- Equivalent of 60 lf of bookshelves
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Approximately 10'x10' relatively closed work station with 6' high panels that can be closed or open, with file drawers and overhead storage with doors.
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (2) Guest chairs
- (1) Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V power to work stations

LIGHTING

- Indirect fluorescent lighting
- Task lighting to work stations

TELEPHONE/DATA

- Provide at two locations

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-4 College Executive Secretary 100 s.f.

A-4

SPACE QUANTITY: 1 (open area within
College Admin. area)

FIXED EQUIPMENT

- None

FUNCTION

- The first point of contact for the College.
- Reception, clerical, scheduling, handling deliveries and purchasing.
- Directs visitors and students to the appropriate departments for assistance.

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Approximately 10'x10' open reception type work station with file drawers and overhead storage with doors.
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- Trash receptacle

ASSIGNED OCCUPANTS

- 1 full time (open office work station)

UNASSIGNED OCCUPANTS

- 2-3 Visitors

MECHANICAL

HVAC

- See Mechanical Design Criteria

DESIRABLE ADJACENCY

- Immediately adjacent to Reception area, accounting and mail area
- Near Dean and Exec. Assistant
- Clearly identifiable and accessible to visitors

PLUMBING

- None

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work station

LIGHTING

- Artificial and natural

TELEPHONE/DATA

- Provide at two locations

ACOUSTICS

- STC 40-45

SECURITY

- Locking doors and drawers on all work station components

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION **INDIVIDUAL SPACE OUTLINE**

A-5 Part Time Clerical

50 s.f.

A-5

SPACE QUANTITY: 1 (open work station
within College Admin.
Area)

FUNCTION

- Clerical work on a part time basis

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Within College Admin. Area
- Near Executive Secretary

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- STC 40-45

SECURITY

- Locking doors and drawers on all work station components

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Approximately 6'x8' work station with file drawers and overhead storage with doors
- (1) 4 high 42" wide lateral file
- Ergonomic desk chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V power to work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work station

TELEPHONE/DATA

- Provide at one location

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-6 College Accountant

100 s.f.

A-6

SPACE QUANTITY: 1 private office

FUNCTION

- Accounting and clerical work with finance and personnel records.
- Deals with certain visitors to the College.
- Deals with sensitive, private information.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Within the College Admin. area but in a semi-private space
- Near Dean and Exec. Assistant with direct access to Dean's Office
- Out of main traffic path

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x60" desk with 42" computer return (with adjustable keyboard support)
- 60" credenza or computer table (or equivalent office system)
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (2) guest chairs
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION **INDIVIDUAL SPACE OUTLINE**

A-7 College Reception

200 s.f.

A-7

SPACE QUANTITY: 1 (adj. to or within
College Admin. area)

FUNCTION

- To greet visitors to the College.
- To provide comfortable waiting for visitors.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 6-8

DESIRABLE ADJACENCY

- Adjacent to College Exec. Secretary
- Near Dean and Exec. Assistant
- Clearly identifiable and accessible to visitors

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board with possibly wood or stone or metal accent
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- STC 40-45

SECURITY

- Keyed lock or card key at entrance to Admin. area

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6-8) Guest lounge chairs
- (4) End tables
- (1) Coffee table
- (1) Literature rack
- (2) Table lamps
- (2) Waste receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Indirect fluorescent lighting
- Incandescent accent lighting

TELEPHONE/DATA

- Provide at (1) location

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-8 Filing Area or Room

150 s.f.

A-8

SPACE QUANTITY: 1

FUNCTION

- Storage for less active files

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Near College Admin. area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Vinyl comp. tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

SECURITY

- Keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- (5) 5 high 42" wide lateral files
- (12) 5 high 30" deep vertical files
(or as necessary based on actual room configuration)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- None

A-9 Copy/Mail Room**150 s.f.****A-9****SPACE QUANTITY: 1****FUNCTION**

- Accommodate copying, binding, collating, mailing, etc.
- Distribution of mail to departments (mail boxes)
- Store office supplies

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4

DESIRABLE ADJACENCY

- Adjacent to College Admin. area
- Mail boxes accessible from a hallway or lobby for dept. pick-up
- Visually isolated from Reception area

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- Suppress equipment noise. Provide absorptive surfaces as necessary

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 22 lf base cabinet, 24" deep
- ± 22 lf wall cabinets, ± 36" high, 12" deep with doors
- ± 6 lf mail boxes

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Large freestanding copier (by Owner)
- (1) Fax machine (by Owner)
- (1) Printer (by Owner)
- (1) Trash receptacle (large)

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical Design Criteria
- 120V convenience outlets
- 120V power to equipment with dedicated circuits as required

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- (1) telephone line for fax
- (2) data locations

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-10 Break Area 100 s.f.
(with kitchenette)

A-10

SPACE QUANTITY: 1

FUNCTION

- Staff area for coffee breaks, preparing snacks for visitors, etc.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 4

DESIRABLE ADJACENCY

- Adjacent to, but not part of, Copy/Mail Room
- Adjacent to College Admin. area
- Near Dean's Conference Room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Vinyl Comp. Tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 10 If base cabinet, 24" deep, with sink
- ± 10 If wall cabinets, ± 36 " high, 12" deep with doors
- 4'x4' white board
- 4'x4' tack board
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 42" Ø table (or size to fit space)
- (4) stacking chairs
- (1) Trash receptacle (large)
- Coffee maker (by Owner)
- Under counter refrigerator (by Owner)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- Deep counter mtd. stainless steel sink

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- 120V power to equipment

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- Provide at (1) location

A-11 Conference Room**280 s.f.****A-11****SPACE QUANTITY: 1****FUNCTION**

- Accommodate meetings of faculty, researchers, visitors, advisory groups, etc.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 12-16

DESIRABLE ADJACENCY

- Part of College Admin. area
- Near Dean's Office
- Easily accessible from public area

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board with accent of stone or wall covering
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- 4'x12' marker board
- ± 12 lf base cabinet, 24" deep
- ± 12 lf wall cabinets, 12" deep
- Projection screen (coordinate size and location with audio visual equipment)
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- Wood conference table for 12
- (12) conference chairs
- (4) side chairs
- Clg. Mounted video projector
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V convenience outlets
- 120V power as required for AV equipment

LIGHTING

- Indirect fluorescent lighting
- Incandescent accent lighting
- Multiple switching and dimming controls

TELEPHONE/DATA

- Provide at one location
- Data as required for AV equipment

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-12 College Development Office 160 s.f.

A-12

SPACE QUANTITY: 1 private office

FUNCTION

- Provide work space to support the administrative functions of development director.
- Accommodate small conferences, filing needs, computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 3-4 Visitors

DESIRABLE ADJACENCY

- Near College Admin area
- Near College Conference room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of 60 lf of bookshelves
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer table (or equivalent office system)
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (4) guest chairs
- 36" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION **INDIVIDUAL SPACE OUTLINE**

A-13 Computer Systems Office Area

600 s.f.

A-13

SPACE QUANTITY: Office work space for 6 work stations plus a small work area

FUNCTION

- Work station space for College computer director and technicians.
- Work space for testing, minor repairs, etc.

ASSIGNED OCCUPANTS

- 6

UNASSIGNED OCCUPANTS

- 1-2 Visitors

DESIRABLE ADJACENCY

- Near as possible to main computer room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or Vinyl Comp. Tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from other spaces, particularly computer room
- STC 40-45

SECURITY

- Keyed lock

FIXED EQUIPMENT

- 8'x4' marker board

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6) approximately 6'x8' work stations with file drawers and overhead storage with doors
- 30"x60" table
- (6) 2 high 42" lateral files
- (6) Ergonomic task chairs
- (6) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V power to work stations and near work table

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Telephone and data to each work station room not covered by work stations
- Data in continuous plug strip all around
- Data access to all computer systems in both Sutton and Browning Buildings
- Assume (12) computers minimum

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-14 Computer Systems Work Area 150 s.f.

A-14

SPACE QUANTITY: 1 work area

FUNCTION

- Work space for College computer technicians.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4

DESIRABLE ADJACENCY

- Adjacent to, or colocated with, Computer Systems office

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or Vinyl Comp. Tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from other spaces, particularly computer room
- STC 40-45

SECURITY

- Keyed lock

FIXED EQUIPMENT

- 8'x4' white board
- ± 30 lf base cabinet/work counter, 24" deep
- ± 30 lf wall cabinets, 12" deep

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4) Ergonomic task stools
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V plug strip all around

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work counter

TELEPHONE/DATA

- Telephone at (1) location
- Data in continuous plug strip all around, above work counter
- Data access to all computer systems in both Sutton and Browning Buildings.

A-15 Computer Room (College) 300 s.f.**A-15**

SPACE QUANTITY: Space for College computers located adjacent to UUSS Computer room.

FUNCTION

- Provide Computer support for entire College.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3

DESIRABLE ADJACENCY

- Immediately adjacent to UUSS Computer Room.
- Near Computer Support Offices and Work Area

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Raised computer floor
- Walls Painted gypsum board
- Ceiling Open to structure

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock – perhaps card access
- Not accessible to the public or uninvited staff
- Glass is encouraged to allow vision into the computer room

FIXED EQUIPMENT

- Approx. (15) computer racks for College (by Owner)

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Computer tables
- Ergonomic task chair

MECHANICAL**HVAC**

- See Mechanical Design Criteria for computer space
- Independent air conditioning unit with underfloor distribution

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical Design Criteria for computer space
- 120V convenience outlets
- Power as necessary to all equipment
- UPS system required
- Emergency generator required

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- See Electrical Design Criteria for special data systems required
- Multiple data access connections to different systems

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

A-16 Computer Room (UOSS) 400 s.f.

A-16

SPACE QUANTITY: Space for UOSS computers and telecommunications equipment.

FUNCTION

- Provide Computer support for UOSS.
- UOSS computers to receive telemetry and data from approx. 200 remote seismographs.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3

DESIRABLE ADJACENCY

- Adjacent to UOSS Earthquake Information Center
- Immediately adjacent to College Computer Room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Raised computer floor
- Walls Painted gypsum board
- Ceiling Open to structure

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock – perhaps card access
- Must be secure from Earthquake Information Center visitors
- Not accessible to the public or uninvited staff
- Glass is encouraged to allow vision into the computer room from the Earthquake Information Center and other areas of invited access
- Computer Room to be located within the “enhanced seismic strengthened” area

FIXED EQUIPMENT

- Approx. (15) computer racks for UOSS (by Owner), bolted to concrete floor.
- Approx. (6) computer monitors for UOSS (by Owner)
- (5) 78”w. x 12”d. x 84”h. storage cabinets with doors (7 shelves per cabinet)

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Computer tables
- (2) Ergonomic task chair
- Adjustable work stool on casters
- 36” w. x 18” d. x 84” h. tape/disc storage cabinet

MECHANICAL

HVAC

- See Mechanical Design Criteria for computer space
- Independent air conditioning unit with underfloor distribution

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical Design Criteria for computer space
- 120V convenience outlets
- Power as necessary to all equipment
- UPS system required (1 hr. duration)
- Emergency generator required (with 36 hour capacity)

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- See Electrical Design Criteria for special data systems required
- Multiple data access connections to different systems
- Data access to all UOSS systems
- Cable tray around room with conduit to raised floor

SPECIAL REQUIREMENTS

- This space along with the Earthquake Information Center and Response Room are to be within the “enhanced seismic strengthened area.” See D-6.

A-17 Computer Room Storage (UUSS) 120 s.f.

A-17

SPACE QUANTITY: 1

FUNCTION

- Storage for computer items not required in computer room.
- Work space for routine assembly and repair of computer equipment.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Near Computer Room, preferably adjacent
- Does not need to be within "enhanced seismic strengthened area"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Vinyl comp. tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

SECURITY

- Keyed lock – perhaps card access

FIXED EQUIPMENT

- (2) 36"w. x 24"d. x 84"h. cabinets with doors
- ± 6 lf of base cabinet, 24" deep
- ± 6 lf of overhead cabinets, 12" deep

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 36"w. x 18"d. x 84"h. cabinets
- 36" x 72" work table
- Adjustable work stool

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- Provide at one location (will chiefly be used to connect computer to data jack)

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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DEPT. OF GEOLOGY & GEOPHYSICS ADMINISTRATION**INDIVIDUAL SPACE OUTLINES****B**

	<u>Net Square Feet</u>
B. Dept. of Geology & Geophysics Administration	
1. Chair Office_____	200
2. Administrative Assistant_____	100
3. Accountant_____	100
4. Work space for future accounting and recruiters_____	50
5. Reception Area_____	100
6. Administrative Officer_____	100
7. Academic Counselor/Support Coordinator_____	100
7a. Thesis Library_____	60
8. Filing Area or Room_____	150
9. Storage Area_____	100
10. Copy/Mail Room_____	150
11. Break Area with kitchenette_____	100
	1,310

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

DEPT. OF GEOLOGY & GEOPHYSICS ADMINISTRATION

INDIVIDUAL SPACE OUTLINES

B-1 Department Chair's Office 200 s.f.**B-1****SPACE QUANTITY:** 1 private office**FUNCTION**

- Provide work space to support administrative functions of faculty member serving as department chair.
- Accommodate small conferences, personal library, computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 4 Visitors

DESIRABLE ADJACENCY

- Within Dept. Admin. area
- Adjacent to Admin. Assistant
- Near Dept. Conference Room
- Accessible to students and faculty

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 110 lf of bookshelves
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer table (or equivalent office system)
- (2) 4 – high 42" wide lateral files
- Ergonomic desk chair
- (4) guest chairs
- 42" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

B-2 Administrative Assistant 100 s.f.

B-2

SPACE QUANTITY: 1

FUNCTION

- The first point of contact for the Department.
- Reception, clerical, scheduling, handling deliveries and purchasing.
- Directs visitors and students access to the department chair.

ASSIGNED OCCUPANTS

- 1 (open office work station)

UNASSIGNED OCCUPANTS

- 2-3 Visitors

DESIRABLE ADJACENCY

- Immediately adjacent to dept. chair
- Near accounting and mail area
- Clearly identifiable and accessible to visitors

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of 40 lf of bookshelves
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Approximately 10'x10' open reception type work station with file drawers and overhead storage with doors.
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (2) guest chairs
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work station

TELEPHONE/DATA

- Provide at two locations

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

DEPARTMENT OF GEOLOGY & GEOPHYSICS ADMINISTRATION INDIVIDUAL SPACE OUTLINE

B-3 Department Accountant 100 s.f.

B-3

SPACE QUANTITY: 1 (open area with semi-private work station within Dept. Admin. area)

FUNCTION

- Accounting and clerical work with finance and personnel records.
- Deals with certain visitors to the Dept.
- Deals with sensitive, private information.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Within the Dept. Admin. area but in a semi-private space
- Near Administrative Assistant
- Out of main traffic path
- Should not be first contact in Dept.

ARCHITECTURAL REQUIREMENTS FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- STC 40-45 within a semi-private environment

SECURITY

- Ability to lock work station with keyed lock

FIXED EQUIPMENT

- Approximately 40 lf of bookshelves
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Approximately 8'x10' relatively closed work station with 6' high panels that can be closed or open, with file drawers and overhead storage with doors.
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (2) Guest chairs
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work station

TELEPHONE/DATA

- Provide at two locations

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

**B-4 Work space for future accounting 50 s.f.
and recruiters**

B-4

SPACE QUANTITY: 1 (open work station
within Dept. Admin.
Area)

FIXED EQUIPMENT

- None

FUNCTION

- Clerical work or recruiters on a part time basis.

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Approximately 6'x8' work station with file drawers and overhead storage with doors
- (1) 4 high 42" wide lateral file
- Ergonomic desk chair
- (2) guest chairs
- Trash receptacle

ASSIGNED OCCUPANTS

- 1

MECHANICAL

HVAC

- See Mechanical Design Criteria

UNASSIGNED OCCUPANTS

- 2 Visitors max

PLUMBING

- None

DESIRABLE ADJACENCY

- Within Dept. Admin. area
- Near Accountant

ELECTRICAL

POWER

- 120V power to work station

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work station

LIGHTING

- Artificial and, if possible, natural

TELEPHONE/DATA

- Provide at one location

ACOUSTICS

- STC 40-45

SECURITY

- Locking doors and drawers on all work station components

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

DEPARTMENT OF GEOLOGY & GEOPHYSICS ADMINISTRATION INDIVIDUAL SPACE OUTLINE

B-5 Department Reception 100 s.f.

B-5

SPACE QUANTITY: 1 (within Department Admin. area)

FIXED EQUIPMENT

- None

FUNCTION

- To greet visitors to the Department.
- To provide comfortable waiting for visitors.

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3-4) Guest lounge chairs
- (2) End tables
- (1) Coffee table
- (1) Literature rack
- (2) Table lamps
- Trash receptacle

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

DESIRABLE ADJACENCY

- Adjacent to Department Admin. Assistant
- Near Chair and Admin. Officer
- Clearly identifiable and accessible to visitors

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Indirect fluorescent lighting
- Incandescent accent lighting

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board with possibly wood or stone accent
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

TELEPHONE/DATA

- Provide at (1) location

ACOUSTICS

- STC 40-45

SECURITY

- Keyed lock or card key at entrance to Admin. area

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

B-6 Dept. Administrative Officer 100 s.f.

B-6

SPACE QUANTITY: 1 private office

FUNCTION

- Provide work space to support administrative functions of the department and faculty.
- Support such functions as inventory of equipment, grant applications, development, etc.
- Support necessary storage of filed materials and computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Near Dept. Admin. area
- Near filing areas
- Near Copy/Mail room
- Near Dept. Conf. Room
- Accessible to faculty

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 40 lf of bookshelves
- 6'x4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x60" desk with 42" computer return (with adjustable keyboard support)
- 60" credenza or computer table (or equivalent office system)
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (2) guest chairs
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

DEPARTMENT OF GEOLOGY & GEOPHYSICS ADMINISTRATION INDIVIDUAL SPACE OUTLINE

**B-7 Academic Counselor/
Support Coordinator 100 s.f.**

B-7

SPACE QUANTITY: 1 private office

FUNCTION

- Provide work space to support administrative functions of the department.
- Support students, book ordering, scheduling, scholarships, etc.
- Support necessary storage of filed materials and computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2 (usually students or parents)

DESIRABLE ADJACENCY

- Near Dept. Admin. area
- Near filing areas
- Near Copy/Mail room
- Near Dept. Conf. Room
- Accessible to students

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 40 lf of bookshelves
- 6'x4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x60" desk with 42" computer return (with adjustable keyboard support)
- 60" credenza or computer table (or equivalent office system)
- (2) 4 high 42" wide lateral files
- Ergonomic desk chair
- (2) guest chairs
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

B-7a Thesis Library

60 s.f.

B-7a

SPACE QUANTITY: 1 (Colocated with
Academic Counselor)

FIXED EQUIPMENT

- Equivalent of 100 lf of bookshelves for theses storage, 12" deep x 7' high

FUNCTION

- Storage for theses

MOVEABLE FURNISHINGS AND EQUIPMENT

- None

ASSIGNED OCCUPANTS

- None

MECHANICAL

HVAC

- See Mechanical Design Criteria

UNASSIGNED OCCUPANTS

- None

PLUMBING

- None

DESIRABLE ADJACENCY

- Colocated with B-7 Academic Counselor/Support Coordinator

ELECTRICAL

POWER

- 120V convenience outlets

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Indirect fluorescent lighting

LIGHTING

- Artificial and natural

TELEPHONE/DATA

- None

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

DEPARTMENT OF GEOLOGY & GEOPHYSICS ADMINISTRATION
INDIVIDUAL SPACE OUTLINE

B-8 Filing Area or Room 150 s.f.

B-8

SPACE QUANTITY: 1

FUNCTION

- Storage for less active files

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Near Dept. Admin. area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Vinyl comp. tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

SECURITY

- Keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- (5) 5 high 42" wide lateral files
- (12) 5 high 30" deep vertical files
(or as necessary based on actual room configuration)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- None

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

B-9 Storage

100 s.f.

B-9

SPACE QUANTITY: 1

FUNCTION

- Storage for Dept. equipment

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Near Dept. Admin. area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Vinyl comp. tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

SECURITY

- Keyed lock

FIXED EQUIPMENT

- Approximately 200 lf of wall mtd. shelves all around room, 7' high.

MOVEABLE FURNISHINGS AND EQUIPMENT

- None

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- None

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

DEPARTMENT OF GEOLOGY & GEOPHYSICS ADMINISTRATION
INDIVIDUAL SPACE OUTLINE

B-10 Copy/Mail Room

150 s.f.

B-10

SPACE QUANTITY: 1

FUNCTION

- Accommodate copying, binding, collating, mailing, etc.
- Distribution of mail to faculty and students.
- Store office supplies

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4

DESIRABLE ADJACENCY

- Adjacent to Dept. Admin. area
- Visually isolated from Reception area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- Suppress equipment noise. Provide absorptive surfaces as necessary

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 15 lf base cabinet, 24" deep
- ± 15 lf wall cabinets, ± 36" high, 12" deep with doors
- Mail cubicles, ± 90"w. x 84"h. x 12"d. with approximately 100 slots

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Large freestanding copier (by Owner)
- (1) Fax machine (by Owner)
- (1) Printer (by Owner)
- (1) Trash receptacle (large)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- 120V power to equipment with dedicated circuits as required

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- (1) telephone line for fax
- (2) data locations

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

B-11 Break Area 100 s.f.
(with Kitchenette)

B-11

SPACE QUANTITY: 1

FUNCTION

- Staff area for coffee breaks, preparing snacks for visitors, etc.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 4

DESIRABLE ADJACENCY

- Adjacent to, but not part of, Copy/Mail Room
- Adjacent to Dept. Admin. area
- Near Conference Room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Vinyl Comp. Tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 10 lf base cabinet, 24" deep, with sink
- ± 10 lf wall cabinets, ± 36" high, 12" deep with doors
- 4'x4' white board
- 4'x4' tack board
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 42" Ø table (or size to fit space)
- (4) stacking chairs
- (1) Trash receptacle (large)
- Coffee maker (by Owner)
- Under counter refrigerator (by Owner)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- Deep counter mtd. stainless steel sink

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- 120V power to equipment

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- Provide at (1) location

**8.2 AREAS OF STRENGTH –
OFFICES, RESEARCH SUPPORT LABS, ETC**

INDIVIDUAL SPACE OUTLINES

Current Department of Geology and Geophysics faculty grouped into general **Areas of Strength** with approximate percentage of time spent with each area:

Internal Processes and Dynamics of the Earth

John Bartley – 100%
John Bowman – 50%
Ron Bruhn – 50%
Dave Chapman – 50%
Rich Jarrard – 50%
Sue Halgedahl – 100%
Barb Nash – 100%
Bob Smith – 50%
Fulvio Tonon – 50%
Jerry Schuster – 25%
Michael Zhdanov – 20%
Walter Arabasz (Aux.) 100%
Jim Pechmann (Aux.) 100%
Kris Pankow (Aux.) 100%
David Dinter (Aux.) 50%
Rob Harris (Aux.) 50%

Surface Processes and Paleoclimate

Frank Brown – 50%
Ron Bruhn – 50%
Thure Cerling – 50%
Margie Chan – 50%
Dave Chapman – 25%
Rich Jarrard – 50%
Paul Jewell – 50%
Cari Johnson – 50%
Jerry Schuster – 25%
David Dinter (Aux.) 50%

Water-Earth Systems

John Bowman – 50%
Frank Brown – 50%
Thure Cerling – 25%
Paul Jewell – 60%
Bill Johnson – 100%
Kip Solomon – 100%
Rob Harris (Aux.) 50%
Bill Parry (Emeritus) 100%

Earth History and Paleobiology

Thure Cerling – 25%
Margie Chan – 50%
Tony Ekdale – 100%
Peter Roth – 100%
Scott Sampson – 100%
Duke Picard (Emeritus) 100%

Earth Resources and Exploration

Dave Chapman – 25%
Cari Johnson – 50%
Erich Petersen – 100%
Jerry Schuster – 50%
Bob Smith – 50%
Fulvio Tonon – 50%
Michael Zhdanov – 80%
Nicolav Golubev (Aux.) 100%

AREAS OF STRENGTH

INTERNAL PROCESSES AND DYNAMICS OF THE EARTH
INDIVIDUAL SPACE OUTLINES

C

	<u>Net Square Feet</u>
C. Internal Processes and Dynamics of the Earth	
1. Faculty Office_____	160
2. Faculty Office_____	160
3. Faculty Office_____	160
4. Faculty Office_____	160
5. Faculty Office_____	160
6. Faculty Office_____	160
7. Auxiliary Faculty Office_____	160
8. Emeritus Faculty Office _____	160
9. (2) Post Doc Offices_____	320
10. (10) Upper Level Graduate Students_____	500
11. (6) Research Support Labs_____	960
12. Lab Tech/Engineers (3, including UUSS)_____	240
13. UUSS Seismic Network Work Area_____	320
14. Field Engineer/Technicians _____	160
15. Seismograph Stations – (see D.)_____	2,310
	6,090

INTERNAL PROCESSES AND DYNAMICS OF THE EARTH
INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

INTERNAL PROCESSES AND DYNAMICS OF THE EARTH
INDIVIDUAL SPACE OUTLINE

C-1 through C-6 Faculty Office 160 s.f.

C-1 through C-6

SEE T-1 FACULTY OFFICE

SPACE QUANTITY: 6

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

C-7 Auxiliary Faculty Office 160 s.f.

C-7

SEE T-2 AUXILLIARY FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

INTERNAL PROCESSES AND DYNAMICS OF THE EARTH
INDIVIDUAL SPACE OUTLINE

C-8 Emeritus Faculty Office 160 s.f.

C-8

SEE T-3 EMERITUS FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

C-9 Post Doc Office 160 s.f. C-9

SEE T-4 POST DOC OFFICE

SPACE QUANTITY: 2

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

INTERNAL PROCESSES AND DYNAMICS OF THE EARTH
INDIVIDUAL SPACE OUTLINE

C-10 Upper Level Graduate Students 50 s.f.

C-10

SEE T-5 UPPER LEVEL
GRADUATE STUDENTS

SPACE QUANTITY: 10

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

C-11 Research Support Lab 160 s.f.

C-11

SEE T-7 RESEARCH SUPPORT LAB

SPACE QUANTITY: 6

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

INTERNAL PROCESSES AND DYNAMICS OF THE EARTH
INDIVIDUAL SPACE OUTLINE

C-12 Lab Technician/Engineer 80 s.f.

C-12

SEE T-8 LAB TECHNICIAN ENGINEER
WITH THE ADDITIONS NOTED HERE

SPACE QUANTITY: 3 (including UUSS)*

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

PLUMBING

DESIRABLE ADJACENCY

*(2) of these spaces should be adjacent to or
colocated with UUSS Seismic Network work
area

**ELECTRICAL
POWER**

**ARCHITECTURAL REQUIREMENTS
FINISHES**

LIGHTING

LIGHTING

TELEPHONE/DATA

ACOUSTICS

SECURITY

*(2) of these spaces, for UUSS
Technicians/Engineers should be similar to C-14
Field Engineer/Technicians

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

**C-13 USS Seismic
Network Work Area**

320 s.f.

C-13

SPACE QUANTITY: 1 work area

FUNCTION

- Work space to support the Network Engineer and Technicians involved in keeping seismograph equipment and other systems functioning.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3

DESIRABLE ADJACENCY

- Adjacent to, or colocated with, Engineers and Technicians
- Near Field Equipment (USS) and Fabrication Workshop

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Sealed Concrete
- Walls Painted gypsum board
- Ceiling Open to structure

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ±35 lf of work counter, 30" deep with cabinets and knee space below
- ±100 lf of adjustable wall shelves, 16" deep
- 4'x6' pegboard on one wall
- ±4'x6' island work counter in center of space with cabinets below
- All counters to have wood or linoleum tops

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Adjustable work stools on casters
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Ventilation fan

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V plug strip all around room above counter
- 120V power at island work counter

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide data in plug strip all around above counter
- (1) 4" conduit to roof of Sutton Bldg. for cabling from work area to roof for temporary testing of seismic equipment (access to roof is required)

**INTERNAL PROCESSES AND DYNAMICS OF THE EARTH
INDIVIDUAL SPACE OUTLINE****C-14 Field Engineer/
Technicians (2) 160 s.f.****C-14****SPACE QUANTITY:** 1 area with (2) work
stations for
engineer/technicians**FUNCTION**

- Technical space for engineers & technicians

ASSIGNED OCCUPANTS

- 2

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Near Equipment/Parts storage and Fabrication Shop
- Adjacent to, or colocated with, Network Engineer
- Adjacent to, or colocated with UUSS Seismic Network Work Area.

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Sealed Concrete
- Walls Painted gypsum board
- Ceiling Open to structure

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 40 lf of 12" deep shelves, wall mtd.
- ± 10 lf of wall cabinet, 12" deep
- ± 5 lf of work counter, 24" deep

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- (2) 30"x60" work desks with 42" computer return (or equivalent work stations)
- (2) 4 high 42" wide lateral files
- (2) Ergonomic desk chairs
- (2) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V convenience outlets
- 120V plug strip at desk and counter area

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

COLLEGE OF MINES & EARTH SCIENCES ADMINISTRATION
INDIVIDUAL SPACE OUTLINES

C-15 Seismograph Stations (see D.)

C-15

D

	<u>Net Square Feet</u>	
D. U of U Seismograph Stations (part of C.)		
1. Director (Auxiliary Faculty Office)	160	
2. Research Assoc. Prof. (Auxiliary Faculty Office)	160	
3. Research Assist. Prof. (Auxiliary Faculty Office)	160	
4. Seismic Network Manager Office	160	
5. Hardware/Software Engineer Office	100	
*6. Earthquake Information Center and Response Room	400	} Earthquake Information Center Area
7. Earthquake Information Specialist (2)	160	
8. Technical Assistants (2 grad students)	100	
9. Group Work Area	200	
10. Library/Mail/Conference Room	250	
11. Administrative Office	200	
12. Administration filing and storage	100	
13. Staff Office	160	
14. Bulk Storage (Archived)		
	2,310	

(Note: this space is accounted for under **C. Internal Processes & Dynamics of the Earth** and should not be counted twice)

*D-6, The Earthquake Information Center area including A-16 USSS Computer Room, and D-5 Hardware/Software Engineer, are to be within the “enhanced seismic strengthened area.”

See D-6 and structural narrative.

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINE

D-1 Director 160 s.f.

D-1

SEE T-2 AUXILIARY FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

- Adjacent to seismograph stations
administrative office
- Near Earthquake Information Center

**ELECTRICAL
POWER**

ARCHITECTURAL REQUIREMENTS

FINISHES

LIGHTING

LIGHTING

TELEPHONE/DATA

ACOUSTICS

SECURITY

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

D-2 Research Assoc. Professor 160 s.f.

D-2

SEE T-2 AUXILIARY FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

- Near Earthquake Information Center

**ELECTRICAL
POWER**

**ARCHITECTURAL REQUIREMENTS
FINISHES**

LIGHTING

LIGHTING

TELEPHONE/DATA

ACOUSTICS

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINE

D-3 Research Assist. Professor 160 s.f.

D-3

SEE T-2 AUXILIARY FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

- Near Earthquake Information Center

**ELECTRICAL
POWER**

**ARCHITECTURAL REQUIREMENTS
FINISHES**

LIGHTING

LIGHTING

TELEPHONE/DATA

ACOUSTICS

SECURITY

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

D-4 Seismic Network Manager 160 s.f.

D-4

SPACE QUANTITY: 1 (private office or
private work station)

FUNCTION

- Managing of the Seismic Network for the Seismograph Stations.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Near Earthquake Information Center
- Near Admin. Office
- Near Director
- Away from media and visitor areas

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- STC 40-45

SECURITY

- Ability to lock office or work station with keyed lock

FIXED EQUIPMENT

- Equivalent of 50 lf of bookshelves
- (2) 48" w. x 12" d. x 84" h. cabinets with shelves and doors
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer return
- (2) 4 high, 42" wide lateral files
- Ergonomic desk chair
- (2) Guest chairs
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to work stations for at least (2) computers

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations, with (3) data lines at each
- Assume a minimum of two computers

D-5 Hardware/Software 100 s.f.
Engineer Office

D-5

SPACE QUANTITY: 1 (semi-private work station)

FUNCTION

- Managing of the computer systems for the Seismic Stations.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 1 Visitor

DESIRABLE ADJACENCY

- Adjacent to Earthquake Information Center
- Near to Computer Room
- Near Computer Storage Room
- Away from media and visitor areas

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- STC 40-45 within a semi-private environment

SECURITY

- Ability to lock work station with keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Approximately 10'x10' relatively closed work station with 6' high panels (or within an alcove area), file drawers and overhead storage with doors, including bookshelves. Door on workstation.
- (2) 4 high, 42" wide lateral files
- Ergonomic desk chair
- Guest chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to work stations for at least (2) computers (on UPS system)

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Provide at two locations, with (3) data lines at each
- Assume a minimum of two computers
- Direct link to computer room
- See Electrical Design Criteria

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

D-6 Earthquake Information 400 s.f.
Center (EIC) and Response Room

D-6

SPACE QUANTITY: 1
FUNCTION

- The heart of a state and regional Information Center, where information received from remote stations is displayed and analyzed.
- An area where the public and the media can be invited to observe the information being received from the seismograph stations.
- The central focus of the space is the helicorder drums and the display monitors.
- The Response Room is a small, private room adjacent to the main Earthquake Information Center where specialists can be away from the public and concentrate on earthquake data analysis (particularly in an emergency).

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- As many as 10-15 visitors at certain times

DESIRABLE ADJACENCY

- Collocated with Earthquake Information Specialists, Technical Assistants, Group Work area and Library/Conf. Room
- Adjacent to UUSS Computer Room if possible
- Near, but not collocated with, UUSS office spaces

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Carpet
- Walls Painted gypsum board with majority of walls covered with tackable surface for maps
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial
- ACOUSTICS**
- STC 40-45
 - NC 30

SECURITY

- Keyed lock – perhaps card access system
- EIC is to be a semi-private environment where the public is invited in at times
- Response Room is a private environment where the public is not allowed
- Glass is encouraged to allow vision into the EIC from hallway and the Response Room

FIXED EQUIPMENT

- 4'x4' white board in Response Room
- Tackable surfaces on all available walls (floor to ceiling)
- 48"w. x 18"d x 84"h. storage cabinet in EIC (for drum paper and records)
- (2) 36"w. x 24"d. x 84"h. storage cabinets with locking doors in Response Room
- Helicorder Drums (by Owner)
- Wall mounted monitor screens (by Owner)

MOVEABLE FURNISHINGS AND EQUIPMENT

- Computer work station adjacent to Helicorder Drums
- (3) 36"x60" layout tables (1 in EIC, 2 in Response Room)
- (2) computer work stations in Response Room
- Displays, maps, etc. (by Owner)
- Printer Table in Response Room

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL
POWER

- See Electrical Design Criteria
- 120V power to all equipment
- Power to all computers on UPS system

LIGHTING

- Indirect fluorescent lighting
- Dimmable incandescent track lighting for Helicorders and Monitors

TELEPHONE/DATA

- (2) telephone locations - one in EIC, one in Response Room
- See Electrical Design Criteria for special data systems required

**D-6 Earthquake Information Center
 (EIC) and Response Room****D-6****SPECIAL REQUIREMENTS**

- This space, along with the USS Computer Room, the USS Group Work Area, the USS Library/Conf. Room, and the USS Hardware/Software Engineer Office, are to be within the “enhanced seismic strengthened area.” This area is to be braced against seismic forces beyond what is required for the rest of the building. It needs to remain in operation even though other parts of the building may be closed due to a seismic event. There may need to be a separate exterior entrance to the enhanced seismic area in order to provide access when entrance to the remainder of the building is denied. All equipment contained within the EIC and the USS Computer Room should be seismically braced to withstand more than the minimal forces required.

This area to serve as an example of a seismically strengthened area. Structural features, braces, connections, etc., should be exposed and featured where possible.

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

D-7 Earthquake Information 80 s.f. ea.
Specialists

D-7

SPACE QUANTITY: 2
 Semi-private work stations @ 80 s.f. each
 (within Earthquake Information Center)

FUNCTION

- Provide workspace for Specialists in charge of Earthquake Information.
- To monitor access to Earthquake Information Center.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 1 visitor

DESIRABLE ADJACENCY

- Within the Earthquake Information Center
- Adjacent to the Response Room
- Near the entrance to the Earthquake Information System

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- STC 40-45 within a semi-private environment

SECURITY

- Ability to lock work station with keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- Approximately 8'x10' relatively closed work station with 6' high panels (or within an alcove area), file drawers and overhead storage with doors.
- 4 high, 42" wide lateral files
- Ergonomic desk chair
- Guest chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to work stations

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Provide at two locations, with (3) data lines at each
- Assume a minimum of two computers/work station

D-8 Technical Assistants 50 s.f. ea.**D-8****SPACE QUANTITY: 2**

Open work station @ 50 s.f. each
(within Earthquake Information Center)

FUNCTION

- Provide workspace for Tech. Assistants working in Earthquake Information Center.
- To monitor access to Earthquake Information Center when necessary.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 1 visitor

DESIRABLE ADJACENCY

- Within the Earthquake Information Center
- Adjacent to Group Work Area
- Near the entrance to the Earthquake Information Center

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Ability to lock work station with keyed lock

FIXED EQUIPMENT

- None

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- Approximately 6'x8' open work station with 6' high panels, file drawers and overhead storage with doors.
- 4 high, 42" wide lateral file
- Ergonomic desk chair
- Guest chair
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V convenience outlets
- 120V power to work stations

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Provide at two locations
- Assume a minimum of two computers/work station

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

D-9 Group Work Area

200 s.f.

D-9

SPACE QUANTITY: 1

(within, but separate from, Earthquake Information Center)

FUNCTION

- Workspace for Info. Specialists, Technical Assistants and others to work on preparing earthquake information and to store both prepared materials and materials in progress.
- Space for group facilities, including copier and mailboxes.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 4-6

DESIRABLE ADJACENCY

- Adjacent to Earthquake Information Center
- Adjacent to Tech. Assistants
- Adjacent to Earthquake Information Specialists
- Near UUSS Administrative Office
- Near Library/Conference Room
- Away from direct public access

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Keyed lock

FIXED EQUIPMENT

- 48" w x 24" d x 84" h storage cabinet with locking doors.
- 6' x 4' white board
- (2) 8' x 4' tack boards (or more if space permits)
- Approx. 20 lf of bookshelves
- ± 9 lf of base cabinet, 24" deep
- ± 9 lf of wall cabinets, ± 30" h x 12" d, with 12 built-in mail boxes

MOVEABLE FURNISHINGS AND EQUIPMENT

- 6' long x 45" wide drafting table (by Owner)
- Drafting stools (by Owner)
- 36" x 60" work table
- Copier (by Owner)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power at drafting table

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at one location

D-10 Library/Conference Room 250 s.f.**D-10****SPACE QUANTITY: 1**

(within, but separate from, Earthquake Information Center)

FUNCTION

- Briefing and meeting area for Seismograph Stations.
- Provide an area for people who are on 24/7 call during special events or emergencies.
- Library area to hold important documents

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 6-10 for up to 72 hours at a time

DESIRABLE ADJACENCY

- Adjacent to EIC
- Adjacent to Group Work Area
- Near UUSS Administrative Office

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- 8'x4' white board
- 8'x4' tack board
- ± 9 lf of base cabinet, 24" deep
- ± 9 lf of wall cabinet, 12" deep
- ± 72 lf of bookshelves
- Projection screen above white board

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- Conference table for 6 – expandable to 10
- (8) Conference chairs
- Trash receptacle
- Coffee maker (by Owner)
- Microwave oven (by Owner)
- Refrigerator (by Owner)
- TV and VCR/DVD (by Owner)
- Drinking water dispenser (by Owner)

MECHANICAL**HVAC**

- See Mechanical Design Criteria
- Ventilation fan

PLUMBING

- Counter mtd. stainless steel sink

ELECTRICAL**POWER**

- 120V convenience outlets
- 120V power to equipment

LIGHTING

- Indirect fluorescent lighting
- Incandescent accent lighting

TELEPHONE/DATA

- Provide at two locations

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

D-11 Administration Office 200 s.f.

D-11

SPACE QUANTITY: 1 Admin. Office area

FUNCTION

- Administration and clerical work for the Seismograph Stations.
- Deals with certain visitors to the Seismograph Stations.
- Deals with sensitive, private information.
- Service to UUSS staff for all purchasing and travel.

ASSIGNED OCCUPANTS

- 2

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Near Seismograph Stations individual offices
- Clearly identifiable and accessible to visitors
- Collocated with Administration filing and storage
- Near UUSS group work area
- Near UUSS library/conference room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (4) 36" wide x 24" deep x 84" high storage cabinets

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" desks with 42" computer return (with adjustable keyboard support)
- (2) 4 high 42" wide lateral files
- Table for typewriter
- (2) Printer tables
- (2) Ergonomic desk chairs
- (2) Guest chairs
- (2) Incandescent table lamps
- (2) Trash receptacles
- Printer (by Owner)
- Fax Machine (by Owner)
- Typewriter (by Owner)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to all office equipment with dedicated circuits as required

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at three locations

D-12 Administration Filing and Storage 100 s.f.**D-12****SPACE QUANTITY: 1****FUNCTION**

- Storage for supplies
- Active records management for UUSS

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2 visitors

DESIRABLE ADJACENCY

- Collocated with UUSS Administration Office

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4-5) 5 high 42" wide lateral files

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V convenience outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- None

U OF U SEISMOGRAPH STATIONS
INDIVIDUAL SPACE OUTLINES

D-13 Staff Office 160 s.f.

D-13

SPACE QUANTITY: 1 private office for 2,
 or (2) work stations at
 80 s.f. ea.

FUNCTION

- Office space for future Seismograph Stations staff.

ASSIGNED OCCUPANTS

- 2

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Near other UUSS offices

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- Equivalent of approx. 50 lf of bookshelves
- 6' x 4' white board
- (2) 48"w. x 12"d. x 84"h. cabinets with shelves and doors
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" work desks with 42" computer returns (with adjustable keyboard supports)
- (2) 4 high 42" wide lateral files
- (2) Ergonomic desk chairs
- (2) Guest chairs
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINES

E

	<u>Net Square Feet</u>
E. Surface Processes and Paleoclimate	
1. Faculty Office_____	160
2. Faculty Office_____	160
3. Faculty Office_____	160
4. Faculty Office_____	160
5. Faculty Office_____	160
6. Auxiliary Faculty Office_____	160
7. Emeritus Faculty Office _____	160
8. (3) Post Docs _____	240
9. (16) Upper Level Graduate Students_____	800
10. (6) Research Support Labs_____	960
11. Lab Tech_____	80
	3,200

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

E-1 through E-5 Faculty Office 160 s.f.

E-1 through E-5

SEE T-1 FACULTY OFFICE

SPACE QUANTITY: 5

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

E-6 Auxiliary Faculty Office 160 s.f.

E-6

SEE T-2 AUXILIARY FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

E-7 Emeritus Faculty Office 160 s.f.

E-7

SEE T-3 EMERITUS FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

E-8 Post Doc Office 160 s.f.

E-8

SEE T-4 POST DOC OFFICE

SPACE QUANTITY: 1 office, plus one
shared with another area of strength (total of 3
Post Docs)

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

PLUMBING

DESIRABLE ADJACENCY

**ELECTRICAL
POWER**

**ARCHITECTURAL REQUIREMENTS
FINISHES**

LIGHTING

LIGHTING

TELEPHONE/DATA

ACOUSTICS

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

E-9 Upper Level Graduate Students 50 s.f.

E-9

SEE T-5 UPPER LEVEL
GRADUATE STUDENTS

SPACE QUANTITY: 16

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

E-10 Research Support Lab 160 s.f.

E-10

SEE T-7 RESEARCH SUPPORT LAB

SPACE QUANTITY: 6

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

E-11 Lab Technician/Engineer 80 s.f.

E-11

SEE T-8 LAB TECHNICIAN/ENGINEER

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SURFACE PROCESSES AND PALEOCLIMATE
INDIVIDUAL SPACE OUTLINE

F

	<u>Net Square Feet</u>
F. Water-Earth Systems	
1. Faculty Office_____	160
2. Faculty Office_____	160
3. Faculty Office_____	160
4. Faculty Office_____	160
5. Emeritus Faculty Office _____	160
6. (3)Post Docs_____	240
7. (15) Upper Level Graduate Students _____	750
8. (4) Research Support Labs_____	640
9. Lab Tech_____	80
	2,510

WATER-EARTH SYSTEMS
INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

WATER-EARTH SYSTEMS
INDIVIDUAL SPACE OUTLINE

F-1 through F-4 Faculty Office 160 s.f.

F-1 through F-4

SEE T-1 FACULTY OFFICE

SPACE QUANTITY: 4

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

WATER-EARTH SYSTEMS
INDIVIDUAL SPACE OUTLINE

F-5 Emeritus Faculty Office 160 s.f.

F-5

SEE T-3 EMERITUS FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

PLUMBING

DESIRABLE ADJACENCY

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

WATER-EARTH SYSTEMS
INDIVIDUAL SPACE OUTLINE

F-6 Post Doc Office 160 s.f.

F-6

SEE T-4 POST DOC OFFICE

SPACE QUANTITY: 1 office, plus one
shared with another area of strength (total of 3
Post Docs)

FUNCTION

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

ARCHITECTURAL REQUIREMENTS

FINISHES

LIGHTING

ACOUSTICS

SECURITY

FIXED EQUIPMENT

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

MECHANICAL
HVAC

PLUMBING

ELECTRICAL
POWER

LIGHTING

TELEPHONE/DATA

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

WATER-EARTH SYSTEMS
INDIVIDUAL SPACE OUTLINE

F-7 Upper Level Graduate Students 50 s.f.

F-7

SEE T-5 UPPER LEVEL
GRADUATE STUDENTS

SPACE QUANTITY: 15

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

WATER-EARTH SYSTEMS
INDIVIDUAL SPACE OUTLINE

F-8 Research Support Lab 160 s.f.

F-8

SEE T-7 RESEARCH SUPPORT LAB

SPACE QUANTITY: 4

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

WATER-EARTH SYSTEMS
INDIVIDUAL SPACE OUTLINE

F-9 Lab Technician/Engineer 80 s.f.

F-9

SEE T-8 LAB TECHNICIAN/ENGINEER

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

G

Net Square Feet

G. Earth History and Paleobiology

1. Faculty Office	160
2. Faculty Office	160
3. Faculty Office	160
4. Emeritus Faculty Office	160
5. (6) Upper Level Graduate Students	300
6. (2) Research Support Labs	320
7. Lab Tech	80
	1,340

EARTH HISTORY AND PALEOBIOLOGY
INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH HISTORY AND PALEOBIOLOGY
INDIVIDUAL SPACE OUTLINE

G-1 through G-3 Faculty Office 160 s.f.

G-1 through G-3

SEE T-1 FACULTY OFFICE

SPACE QUANTITY: 3

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH HISTORY AND PALEOBIOLOGY
INDIVIDUAL SPACE OUTLINE

G-4 Emeritus Faculty Office 160 s.f.

G-4

SEE T-3 EMERITUS FACULTY OFFICE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH HISTORY AND PALEOBIOLOGY
INDIVIDUAL SPACE OUTLINE

G-5 Upper Level Graduate Students 50 s.f.

G-5

SEE T-5 UPPER LEVEL
GRADUATE STUDENTS

SPACE QUANTITY: 6

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH HISTORY AND PALEOBIOLOGY
INDIVIDUAL SPACE OUTLINE

G-6 Research Support Lab 160 s.f.

G-6

SEE T-7 RESEARCH SUPPORT LAB

SPACE QUANTITY: 2

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH HISTORY AND PALEOBIOLOGY
INDIVIDUAL SPACE OUTLINE

G-7 Lab Technician/Engineer 80 s.f.

G-7

SEE T-8 LAB TECHNICIAN/ENGINEER

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

EARTH HISTORY AND PALEOBIOLOGY
INDIVIDUAL SPACE OUTLINE

H

	<u>Net Square Feet</u>
H. Earth Resources and Exploration	
1. Faculty Office_____	160
2. Faculty Office_____	160
3. Faculty Office_____	160
4. Faculty Office_____	160
5. Auxiliary Faculty Office_____	160
6. (3) Post Doc Offices _____	480
7. (17) Upper Level Graduate Students _____	850
8. (4) Research Support Labs_____	640
	2,770

EARTH RESOURCES AND EXPLORATION
INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH RESOURCES AND EXPLORATION
INDIVIDUAL SPACE OUTLINE

H-1 through H-4 Faculty Office 160 s.f.

H-1 through H-4

SEE T-1 FACULTY OFFICE
WITH THE ADDITIONS NOTED HERE

SPACE QUANTITY: 4

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

- Individual faculty may vary moveable furnishings to provide more computer space in lieu of guest seating and conference table

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

**MECHANICAL
HVAC**

**ARCHITECTURAL REQUIREMENTS
FINISHES**

PLUMBING

LIGHTING

**ELECTRICAL
POWER**

ACOUSTICS

LIGHTING

SECURITY

TELEPHONE/DATA

- Anticipate at least (4) computers
- Provisions for wireless capability
- Provide data connection to INSCC

EARTH RESOURCES AND EXPLORATION
INDIVIDUAL SPACE OUTLINE

H-5 Auxiliary Faculty Office 160 s.f.

H-5

SEE T-2 AUXILIARY FACULTY OFFICE
WITH THE ADDITIONS NOTED HERE

SPACE QUANTITY: 1

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

- Individual faculty may vary moveable furnishings to provide more computer space in lieu of guest seating and conference table

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

**MECHANICAL
HVAC**

**ARCHITECTURAL REQUIREMENTS
FINISHES**

PLUMBING

LIGHTING

**ELECTRICAL
POWER**

ACOUSTICS

LIGHTING

SECURITY

TELEPHONE/DATA

- Anticipate at least (4) computers
- Provisions for wireless capability
- Provide data connection to INSCC

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH RESOURCES AND EXPLORATION
INDIVIDUAL SPACE OUTLINE

H-6 Post Doc Office 160 s.f.

H-6

SEE T-4 POST DOC OFFICE
WITH THE ADDITIONS NOTED HERE

SPACE QUANTITY: 3

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

- Anticipate at least (4) computers
- Provisions for wireless capability
- Provide data connection to INSCC

EARTH RESOURCES AND EXPLORATION
INDIVIDUAL SPACE OUTLINE

H-7 Upper Level Graduate Students 50 s.f.

H-7

SEE T-5 UPPER LEVEL
GRADUATE STUDENTS
WITH THE ADDITIONS NOTED HERE

SPACE QUANTITY: 17

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

UNASSIGNED OCCUPANTS

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

- Anticipate at least (4) computers
- Provisions for wireless capability

SECURITY

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
--

EARTH RESOURCES AND EXPLORATION
INDIVIDUAL SPACE OUTLINE

H-8 Research Support Lab 160 s.f.

H-8

SEE T-7 RESEARCH SUPPORT LAB

SPACE QUANTITY: 4

FIXED EQUIPMENT

FUNCTION

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

ASSIGNED OCCUPANTS

UNASSIGNED OCCUPANTS

**MECHANICAL
HVAC**

DESIRABLE ADJACENCY

PLUMBING

**ARCHITECTURAL REQUIREMENTS
FINISHES**

**ELECTRICAL
POWER**

LIGHTING

LIGHTING

ACOUSTICS

TELEPHONE/DATA

SECURITY

EARTH RESOURCES AND EXPLORATION
INDIVIDUAL SPACE OUTLINE

8.3 SUPPORT AREAS

INDIVIDUAL SPACE OUTLINES

J

	<u>Net Square Feet</u>
J. Sample Preparation Area	
1. Sample Prep Area_____	200
2. Trim Saws_____	150
3. Polishing Room_____	150
4. Office Area_____	80
5. Slabbing Room_____	250
6. Crushing Room_____	300
7. Student Work Space_____	80
8. Heavy Liquids Separation_____	160
9. Frantzing Room_____	150
10. Water Prep. & Processing for Hydro. & Environmental Research (incl. cold storage)_____	690
	2,210

Sample Preparation Area should be located on 1st Level and near Elevator, with direct access to Loading Area.

SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINES

SUPPORT SPACES – SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-1 Sample Prep Area

200 s.f.

J-1

SPACE QUANTITY: 1

FUNCTION

- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-3 staff and student employees

DESIRABLE ADJACENCY

- Near other sample prep areas
- Near office

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 26 lf of base cabinet with lab top, 30" deep, open to adjustable shelves below
- ± 8 lf of open wall cabinets above, 12" deep
- (3) 24" w x 24" d x 7' h storage cabinets
- Fume hood
- Rack for bottled gasses

MOVEABLE FURNISHINGS AND EQUIPMENT

- Thin section machine (by Owner)
- Hillquist grinder (by Owner)
- Ultrasonic (by Owner)
- Rock Polisher (by Owner)
- (2) Ergonomic lab stools
- Various pieces of lab top calibration equipment (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- 100% exhaust for dust control

PLUMBING

- Lab sink in counter (with sediment trap)

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V plug strip at counters
- 220V at fume hood and to ultrasonic

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide (1) lab counter (high speed internet access)
- Assume (0) computers

SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-2 Trim Saws

150 s.f.

J-2

SPACE QUANTITY: 1

FUNCTION

- Area to prepare samples (rock sawing and grinding) for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1 staff/student employee

DESIRABLE ADJACENCY

- Near other Polishing Room
- Near other areas within sample prep

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board, moisture resistant back splash to 72" at saw station.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed lock

SPECIAL FEATURES

- Extremely humid conditions. Provide overhead vent, floor drain and mechanical controls as needed.

FIXED EQUIPMENT

- ± 10 lf of base cabinet with lab top, 30" deep, open to adjustable shelves below
- ± 12 lf of 24"d x 7' h storage cabinets
- Vent hood above saw station

MOVEABLE FURNISHINGS AND EQUIPMENT

- Diamond lap (by Owner)
- Iron lap (by Owner)
- (2) 10", (1) 12" and (1) 5" trim saws (by Owner)
- (1) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- Dust collection systems for saws
- 100% exhaust for dust control

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Floor drain

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

SUPPORT SPACES – SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-3 Polishing Room 150 s.f. J-3

SPACE QUANTITY: 1

FUNCTION

- Area to prepare samples (by polishing) for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1 staff/student employee

DESIRABLE ADJACENCY

- Near Trim Saws
- Near other areas within Sample Prep

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed lock

SPECIAL FEATURES

- Clean conditions (ie. one micron polishing conditions). Either separate room on independent VAV box, or provide positive pressure, as not to draw contaminants into room.

FIXED EQUIPMENT

- ± 18 lf of base cabinet with lab top

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Ecomet polishers with computers (by Owner)
- Syntron (by Owner)
- (2) Polishing tables (by Owner)
- (2) Metal lab stools
- (1) Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- Ventilation hood for polishers
- 100% exhaust for dust control

PLUMBING

- Lab sink in counter (with sediment trap)
- Supply and drain to each polishing table
- Compressed air
- Floor drain

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide (2) lab counter (high speed internet access)
- Assume (2) computers

SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-4 Office Area

80 s.f.

J-4

SPACE QUANTITY: 1

FUNCTION

- Provide work space to support Sample Preparation Area.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 1 Visitors

DESIRABLE ADJACENCY

- Adjacent to Sample Prep Area

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 20 lf of bookshelves
- (1) 4'x 4' white boards
- (1) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) 30"x60" desk (with adjustable keyboard support)
- (1) 4 high 30" wide lateral files
- (1) Ergonomic desk chairs
- (1) Guest chairs
- (1) Incandescent table lamps
- (1) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide one locations
- Anticipate (1) computers/desk

SUPPORT SPACES – SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-5 Slabbing Room 250 s.f. J-5

SPACE QUANTITY: 1

FUNCTION

- Area to prepare samples (by slabbing & sawing) for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1 staff/students employee

DESIRABLE ADJACENCY

- Near other areas within Sample Prep

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed lock

SPECIAL FEATURES

- This room must be well ventilated (vapors)

FIXED EQUIPMENT

- ± 8 lf of base cabinet with lab top, 30" deep, open to adjustable shelves below
- ± 48" w x 24" d x 7' h storage cabinet

MOVEABLE FURNISHINGS AND EQUIPMENT

- 36" slab polisher (by Owner)
- 12" rock saw (oil) (by Owner)
- 14" slab saw (oil), 24" slab saw (water), 36" slab saw (oil) (by Owner)
- Wilfe table (by Owner)
- Flammables storage cabinet (by Owner)
- 135° C epoxy oven with vent (by Owner)
- Kitty litter barrel (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- Ventilation hood
- 100% exhaust for dust control

PLUMBING

- Lab sink in counter (with sediment trap)
- Floor drain

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-6 Crushing Room

300 s.f.

J-6

SPACE QUANTITY: 1

FUNCTION

- Area to prepare samples (by crushing, drilling and seiving) for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1 staff/student employee

DESIRABLE ADJACENCY

- Near other areas within Sample Prep

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 8 lf of base cabinet with lab top, 30" deep, open to adjustable shelves below
- ± 48" w x 24" d x 7' h storage cabinet

MOVEABLE FURNISHINGS AND EQUIPMENT

- Retsch, Bico, Ro-Tap, Core drill press, bench grinder, drill press, core splitter, shatter box (by Owner)
- Sieves and sieve storage cabinet (by Owner)
- (1) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria
- 100% exhaust for dust control

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum
- Floor drain

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

SUPPORT SPACES – SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-7 Student Work Space 80 s.f.

J-7

SPACE QUANTITY: 1

FUNCTION

- Work space for student employees.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 1/work station

UNASSIGNED OCCUPANTS

-

DESIRABLE ADJACENCY

- Adjacent to sample prep office.

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

SECURITY

- Keyed locks on all work station components

FIXED EQUIPMENT

- 4'x4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- ± 8 lf of work surface with overheard storage with doors
- Ergonomic task chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to each work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Data connection at each work station
- Anticipate (2) computers/station

SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-8 Heavy Liquids Separation 160 s.f.

J-8

SPACE QUANTITY: 1

FUNCTION

- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1 staff/student employee

DESIRABLE ADJACENCY

- Near other areas within Sample Prep

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 15 lf of base cabinet with lab top, 30" deep shallow drawers for glassware storage and closed shelves below
- ± 12 lf of wall cabinet above, 12" deep
- Fume hood (downdraft)

MOVEABLE FURNISHINGS AND EQUIPMENT

- Drying oven with vent (by Owner)
- Rack for IR lights (by Owner)
- (2) Trash receptacles
- Vented chemical storage cabinet

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- 100% exhaust for dust control

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

SUPPORT SPACES – SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-9 Frantzing Room 150 s.f. J-9

SPACE QUANTITY: 1

FUNCTION

- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1 staff/student employee

DESIRABLE ADJACENCY

- Near other areas within Sample Prep

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 12 lf of base cabinet with lab top, 30" deep shallow drawers for glassware storage and closed shelves below
- ± 12 lf of wall cabinet above, 12" deep
- (2) 48" w x 24" d x 7' h storage cabinets

MOVEABLE FURNISHINGS AND EQUIPMENT

- Frantz 1, 2 & 3, pumpkin frantz, and "spare" frantz (by Owner)
- Shake table (by Owner)
- (1) 30" x 60" desk
- (1) Ergonomic task chairs
- (1) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- 100% exhaust for dust control

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each piece of equipment
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (1) at lab counter
- Assume (2) computers
- Provisions for wireless capability

SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

J-10 Water Prep. & Processing for 700 s.f.
Hydrology & Environmental
Research

J-10

SPACE QUANTITY: 1

FUNCTION

- Support lab for hydrologic and environmental research, preparation of aqueous samples, and perishable sample storage.
- Core sample processing 200 sf
- Refrigerated sample storage, 100 sf
- Sample shipping and receiving, 200 sf
- Coarse sample preparation, 200 sf

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 staff and students

DESIRABLE ADJACENCY

- Near Sample Prep Office

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring with integral cove base
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (1) 8'x4' white boards
- ± 40 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 32 lf of wall cabinets above, 12" deep
- ± 28 lf of island base cabinet w/ lab top, 30" deep back to back in center of room, open below on one side, shallow glass storage drawers on other
- (2) 48" w x 24" d x 4' h chemical storage cabinets
- (2) Fume hoods
- Rack for bottled gasses & liquids
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) 36" x 72" tables for layout
- (2) Ergonomic task chairs
- (2) Ergonomic lab stool
- Cold sample processing: saws, sediment core, snow core and ice sample prep
- Refrigerated sample storage: (4) commercial size refrigerators, (2-5) freezers
- Sample shipping and receiving: various equipment (by Owner)
- Coarse sample preparation: coarse analytical balance, glassware supplies area, magnetic stirrers, pH meters, conductivity meters, filters, and various equipment (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- Cold sample processing area must be kept at or below 40 degrees F, as needed.

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Floor drains
- Compressed air
- Natural gas
- Vacuum
- DI Water

**J-10 Water Prep. & Processing for 950 s.f.
Hydrology & Environmental
Research**

J-10

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk and to island tables in center of room
- 120V plug strip at counters
- UPS power with generator backup for storage refrigerators and freezers.

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter, and (2) for island work tables (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

SAMPLE PREPARATION AREA
INDIVIDUAL SPACE OUTLINE

K

K. Collections/Curation

1. Fossils	600
2. Rocks & Minerals	600
3. Paleo Collections	700
4. Sedimentary/Carbonate Collections	200
5. Staging Area/Class Set-Up	500
6. Mineral Collection/Work Area	600
7. Chemical Work Space/Sample Prep	300
8. Curation Office	80
9. Rock Splitting/Sandblasting	100
10. Curation Equipment Storage	300
11. Map Storage Room	300
12. Radioactive Storage	50
	4,330

Note: High density compact storage systems for collections are planned.

Collections/Curation (due to heavy loads generated by collection cabinets and compact storage system) should be located on the 1st Level and near Elevator, with direct access to Loading Area. K-5 Staging Area/Class Set-Up should be located near O-2 and O-5 Teaching Labs.

K-1 Fossils

600 s.f.

K-1

SPACE QUANTITY: 1

FUNCTION

- Collection storage area.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 visitors

DESIRABLE ADJACENCY

- Near other spaces within Collection/Curation

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- None

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- ± 160 lf of collections cabinets within compact storage system (30" w x 30" h x 7' h)
- ± 18 lf of base cabinet with lab top, 30" deep, open below
- ± 18 lf of wall cabinets above, 12" deep
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Ergonomic lab stool
- Various pieces of lab top equipment (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting
- Task light at cabinet work surface

TELEPHONE/DATA

- Provide (1) at lab counter (high speed internet access)
- Assume (1) computers
- Provisions for wireless capability

COLLECTION/CURATION
INDIVIDUAL SPACE OUTLINE

K-2 Rocks & Minerals

600 s.f.

K-2

SPACE QUANTITY: 1

FUNCTION

- Collection storage area.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 visitors

DESIRABLE ADJACENCY

- Near other spaces within Collection/Curation

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- None

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- ± 160 lf of collections cabinets within compact storage system (30"w x 30"h x 7'h)
- ± 18 lf of base cabinet with lab top, 30" deep, open below
- ± 18 lf of wall cabinets above, 12" deep
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Ergonomic lab stool
- Various pieces of lab top equipment (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting
- Task light at cabinet work surface

TELEPHONE/DATA

- Provide (1) at lab counter (high speed internet access)
- Assume (1) computers
- Provisions for wireless capability

K-3 Paleo Collections**700 s.f.****K-3****SPACE QUANTITY: 1****FUNCTION**

- Collection storage area.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 visitors

DESIRABLE ADJACENCY

- Near other spaces within Collection/Curation

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- None

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- ± 180 lf of collections cabinets within compact storage system (30" w x 30" h x 7' h)
- ± 18 lf of base cabinet with lab top, 30" deep, with 10' of doors and drawers and 8' open below
- ± 18 lf of wall cabinets above, 12" deep
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Ergonomic lab stool
- Various pieces of lab top equipment (by Owner)
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting
- Task light at cabinet work surface

TELEPHONE/DATA

- Provide (1) at lab counter (high speed internet access)
- Assume (1) computers
- Provisions for wireless capability

COLLECTION/CURATION
INDIVIDUAL SPACE OUTLINE

K-4 Sedimentary/Carbonate 200 s.f.
Collections

K-4

SPACE QUANTITY: 1

FUNCTION

- Collection storage area.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 visitors

DESIRABLE ADJACENCY

- Near other spaces within Collection/Curation

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- None

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- ± 30 lf of collections cabinets (30" w x 30" h x 7" h)
- ± 8 lf of base cabinet with lab top, 30" deep, open below
- ± 8 lf of wall cabinets above, 12" deep
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) Ergonomic lab stool
- Various pieces of lab top equipment (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting
- Task light at cabinet work surface

TELEPHONE/DATA

- Provide (1) at lab counter (high speed internet access)
- Assume (1) computers
- Provisions for wireless capability

K-5 Staging Area/Class Set-up 500 s.f.**K-5****SPACE QUANTITY: 1****FUNCTION**

- Collection storage and staging area.
- Area to prepare teaching samples for transport to teaching labs.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 staff and students

DESIRABLE ADJACENCY

- Adjacent to O2 – Mineral & Petrology, O4 – Paleontology & Sedimentary Geology Teaching Labs.

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 50 lf of collections cabinets (30" w x 30" h x 7' h)
- (2) 48' w x 24' d x 7' h storage cabinets

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) Equipment carts (by Owner)
- (1) 36" x 72" tables for layout
- (2) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical design criteria
- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

COLLECTION/CURATION
INDIVIDUAL SPACE OUTLINE

K-6 Mineral Collection/Work Area 600 s.f.

K-6

SPACE QUANTITY: 1

FUNCTION

- Work area to support collections management.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 staff and students

DESIRABLE ADJACENCY

- Near Chemical Work Space/Sample Prep

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 12 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 8 lf of wall cabinets above, 12" deep
- ± 80 lf of collections cabinets (30" w x 30" h x 7" h)
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) 36" x 72" tables for layout
- Microscopes (by Owner)
- (2) Ergonomic task chairs
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Natural gas
- Vacuum

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk and to island tables in center of room
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter, and (2) for island work tables (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

K-7 Chemical Work Space/Sample Prep
300 s.f.**K-7****SPACE QUANTITY: 1****FUNCTION**

- Work area to support collections management.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 staff and students

DESIRABLE ADJACENCY

- Near other areas within Collection/Curation

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 30 lf of collections cabinets (30" w x 30" h x 7' h)
- ± 16 lf of base cabinet with lab top, 30" deep, open below
- ± 12 lf of wall cabinets above, 12" deep
- Fume hood
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) Ergonomic lab stool
- Miscellaneous lab top equipment (by Owner)
- Flammables storage cabinets (by Owner)
- (1) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical design criteria for labs
- Floor drain

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Natural gas
- Vacuum

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide (1) at lab counter (high speed internet access)
- Assume (1) computers
- Provisions for wireless capability

COLLECTION/CURATION
INDIVIDUAL SPACE OUTLINE

K-8 Curation Office

80 s.f.

K-8

SPACE QUANTITY: 1

FUNCTION

- Provide work space to support Collections/Curation.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 1 Visitors

DESIRABLE ADJACENCY

- Near other areas within Collection/Curation

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from spaces above
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 20 lf of bookshelves for each post doc
- (1) 4'x 4' white boards
- (1) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) 30"x60" desk (with adjustable keyboard support)
- (1) 4 high 30" wide lateral files
- (1) Ergonomic desk chairs
- (1) Guest chairs
- (1) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide one locations
- Anticipate (1) computers/desk

K-9 Rock Splitting/Sandblasting 100 s.f.**K-9****SPACE QUANTITY:** 1**FUNCTION**

- Provide work space to support sample prep for collections and further work

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 staff and students

DESIRABLE ADJACENCY

- Near Mineral Collection/Work Area, and Chemical Work Space/Sample Prep

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ± 8 lf of base cabinet with lab top, 30" deep, open to adjustable shelves below
- ± 48" w x 24" d x 7' h storage cabinets

MOVEABLE FURNISHINGS AND EQUIPMENT

- Equipment (by Owner)
- Flammables storage cabinet
- Sand blasting cabinet (by Owner)
- (2) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical design criteria for labs
- 100% exhaust for dust control

PLUMBING

- Lab sink in counter (with sediment trap)
- Floor drain

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

COLLECTION/CURATION
INDIVIDUAL SPACE OUTLINE

K-10 Curation Equipment Storage 300 s.f.

K-10

SPACE QUANTITY: 1

FUNCTION

- Storage area to support collections management.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2 staff and students

DESIRABLE ADJACENCY

- Near other areas within Collection/Curation

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- Shelving units (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

K-11 Map Storage Room**300 s.f.****K-11****SPACE QUANTITY: 1****FUNCTION**

- Storage of maps used for field studies, research and instruction.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-4 staff and students

DESIRABLE ADJACENCY

- Near other areas within Collection/Curation

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 36" x 72" tables for map layout
- (2) 36" w x 7' h bookcases
- (4) Ergonomic task chairs
- Map cabinets (by Owner)
- (2) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical design criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

COLLECTION/CURATION
INDIVIDUAL SPACE OUTLINE

K-12 Radioactive Storage

50 s.f.

K-12

SPACE QUANTITY: 1

FUNCTION

- Storage of uranium ores and other radioactive mineral specimens.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1 staff

DESIRABLE ADJACENCY

- Near other areas within Collection/Curation

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board.
- Ceiling Painted gypsum board
- Radiation shielding in walls, ceiling and door.

LIGHTING

- Artificial

SECURITY

- Keyed lock

FIXED EQUIPMENT

- None

MOVEABLE FURNISHINGS AND EQUIPMENT

- Storage shelving (by Owner)

MECHANICAL

HVAC

- See Mechanical design criteria for Radioactive Storage

PLUMBING

- None

ELECTRICAL

POWER

- None

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

L

	<u>Net Square Feet</u>
L. General Storage	
1. Dark room (remains in WBB)	
2. Field Equipment (Seismology)_____	500
3. Field Equipment (Electromagnetics)_____	160
4. Geol. Engr. Equipment_____	500
5. General Equipment Bulk Storage_____	600
6. Field Equipment (UUSS)_____	400
7. Transition Storage (UUSS)_____	240
	2,400

GENERAL STORAGE
INDIVIDUAL SPACE OUTLINES

L-2 Field Equipment (Seismology) 500 s.f.**L-2****SPACE QUANTITY: 1****FUNCTION**

- Storage for field equipment and other items which need to be readily available.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3

DESIRABLE ADJACENCY

- Near USS areas
- Near loading area

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Sealed Concrete
- Walls Painted gypsum board or CMU
- Ceiling Open to structure

LIGHTING

- Artificial

SECURITY

- Keyed lock

SPECIAL FEATURES

- Double door

FIXED EQUIPMENT

- (16) 36" w x 18" d x 7' h of heavy duty steel shelving units
- ±84 lf of wall shelves, 24" deep
- ±300 lf of wall shelves, 18" deep
- ±60 lf of wall shelves, 12" deep

MOVEABLE FURNISHINGS AND EQUIPMENT

- None

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

**GENERAL STORAGE
INDIVIDUAL SPACE OUTLINE**

L-3	Field Equipment (Electromagnetics)	160 s.f.	L-3
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SPACE QUANTITY: 1

FUNCTION

- Storage for field equipment and other items which need to be readily available.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1

DESIRABLE ADJACENCY

- Near loading area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls Painted gypsum board or CMU
- Ceiling Open to structure

LIGHTING

- Artificial

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ±250 lf of wall shelves, 18" deep

MOVEABLE FURNISHINGS AND EQUIPMENT

- None

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

**L-4 Geological Engineering 500 s.f.
Equipment**

L-4

SPACE QUANTITY: 1

FUNCTION

- Storage for field equipment and other items which need to be readily available.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3

DESIRABLE ADJACENCY

- Near loading area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls Painted gypsum board or CMU
- Ceiling Open to structure

LIGHTING

- Artificial

SECURITY

- Keyed lock

SPECIAL FEATURES

- Double door

FIXED EQUIPMENT

- (16) 36" w x 18" d x 7' h of heavy duty steel shelving units
- ±84 lf of wall shelves, 24" deep
- ±300 lf of wall shelves, 18" deep
- ±60 lf of wall shelves, 12" deep

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- None

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

GENERAL STORAGE
INDIVIDUAL SPACE OUTLINE

L-5 General Equipment Bulk Storage 600 s.f.

L-5

SPACE QUANTITY: 1 storage area
(divided into (12) separate fenced areas)

FUNCTION

- Provide storage space to support research, teaching and field work activities.
- Provide an area for field equipment prep. and cleaning.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3 Visitors

DESIRABLE ADJACENCY

- Near Loading Area

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Sealed Concrete
- Walls Painted CMU, with 8' high metal fence enclosures
- Ceiling Open to structure

LIGHTING

- Artificial

SECURITY

- Keyed Lock at door and to fenced storage units

SPECIAL FEATURES

- Double door

FIXED EQUIPMENT

- Retractable laundry lines
- ±12 lf storage lockers, 30" deep (with varied bin sizes)

MOVEABLE FURNISHINGS AND EQUIPMENT

- (1) 30"x60" table
- Trash receptacle (large)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- 1 utility sink with hand held sprayer and sediment trap
- Floor drain

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

L-6 Field Equipment (UOSS) 400 s.f.**L-6****SPACE QUANTITY:** 1**FUNCTION**

- Storage for field equipment and other items which need to be readily available.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3

DESIRABLE ADJACENCY

- Near UOSS Seismic Network Work Area
- Near loading area
- Near common fabrication shop, if possible

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Sealed Concrete
- Walls Painted gypsum board or CMU
- Ceiling Open to structure

LIGHTING

- Artificial

SECURITY

- Keyed lock

SPECIAL FEATURES

- Double door

FIXED EQUIPMENT

- ±60 lf of heavy duty steel shelving units, 18" deep x 84" high
- ±16 lf of base cabinet, 24" deep
- ±16 lf of open wall shelving cabinets, 12" deep

MOVEABLE FURNISHINGS AND EQUIPMENT

- None

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

**GENERAL STORAGE
INDIVIDUAL SPACE OUTLINE**

L-7 Transition Storage (UOSS) 240 s.f.

L-7

SPACE QUANTITY: 1

FUNCTION

- Storage for files, documents, and other items which need to be readily available.
- Storage for supplies ordered in bulk, including drum-recorder paper.
- Storage for materials in transition to University archives.
- Storage for small collection of selected, historically valuable paper seismograms.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-2

DESIRABLE ADJACENCY

- Near UOSS areas
- Near loading area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls Painted gypsum board or CMU
- Ceiling Open to structure

LIGHTING

- Artificial

SECURITY

- Keyed lock

FIXED EQUIPMENT

- Approx. 84 lf of shelves, 12" deep
- Approx. 84 lf of shelves, 24" deep (heavy duty)
- (4) 44"w. x 42"d. x 84"h. heavy duty shelving racks with 7 shelves each. For storage of seismograms. (Seismogram boxes are 14"x39")

MOVEABLE FURNISHINGS AND EQUIPMENT

- None

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- None

M

	<u>Net Square Feet</u>	
M. Common Areas		
1. Student/Faculty Mtg. Room w/Kitchenette_____	550	
2. Geology SAC Area_____	200	
3. Student Computer Lab_____	700	
4. Computer Extension Room (adj. to Computer Lab)_____	80	
5. Small Conference Room for 12-15 _____	250	} colocated w/moveable partition between
6. Small Seminar/Conference Room for 12-15 _____	250	
7. (3) Informal Meeting Areas _____	250	
8. Media/Display/Exhibit Area (UUSS)_____	250	
9. Common Display/Museum/Exhibit Area near lobby__	1,250	
10. Common Fabrication Workshop Area (UUSS & G/G)___	600	
	4,380	

COMMON AREAS

INDIVIDUAL SPACE OUTLINES

**M-1 Student/Faculty Meeting Room 550 s.f.
with Kitchenette****M-1**

SPACE QUANTITY: 1 Conference/Lounge
Area with Kitchenette.

FUNCTION

- Provide space to support informal and formal meetings as well as comfortable lounge area.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 20-30 Visitors

DESIRABLE ADJACENCY

- Near Geology/Geophysics Administration

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- 12 lf of base cabinet with drawers and doors and wall cabinets above (kitchenette).
- (2) 8' wide x 4' high white boards
- 12 lf of tackable wall surface
- (10) coat hooks

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- (5) 30"x60" tables
- 42" diameter table
- (30) Stackable chairs
- (1) Refrigerator (by Owner)
- (1) Microwave oven (by Owner)
- (1) Coffee maker (by Owner)
- (2) Large trash receptacles

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- 1 large sink

ELECTRICAL**POWER**

- 120V Outlets (including floor outlets)

LIGHTING

- Indirect fluorescent lighting
- Direct incandescent lighting

TELEPHONE/DATA

- Data at 2 locations
- Provide for wireless data

COMMON AREA
INDIVIDUAL SPACE OUTLINE

M-2 Geology SAC Area

200 s.f.

M-2

SPACE QUANTITY: 1 Meeting Area

FUNCTION

- Meeting space for undergraduate students and Student Advisory Committee.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 6-8

DESIRABLE ADJACENCY

- Near other student areas.
- Easily accessible to all students.

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- ±60 lf of open shelves, 7' high
- 48" wide x 12" deep x 7' high lockable storage cabinet
- (2) 6'x4' white boards
- 4'x4' tack board
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" tables
- (8) Stackable chairs
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Data at 2 locations
- Provide for wireless data

M-3 Student Computer Lab 700 s.f.

M-3

SPACE QUANTITY: 1

FUNCTION

- Provide space for student computer activities and teaching of computer systems.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 20-30 Students

DESIRABLE ADJACENCY

- Near classrooms if possible
- Easily accessed by students

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Carpet
- Walls Painted gypsum board
Glass at walls which occur adjacent to public space
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- ±8 lf of base cabinet, 24" deep
- 12' projection screen
- (2) 6' wide x 4' high white boards

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- (15) 30"x72" moveable work tables (with wire management)
- (30) Ergonomic task chairs
- Trash receptacle
- Ceiling mtd. projector (by Owner)
- Printer (by Owner)
- Plotter (by Owner)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets
- J boxes to accommodate wired furniture

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide data at each work table and printer locations
- Provide for wireless data

COMMON AREA
INDIVIDUAL SPACE OUTLINE

M-4 Computer Extension Room 80 s.f.

M-4

SPACE QUANTITY: 1

FUNCTION

- Provide space for computer support equipment for the Student Computer Lab

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Immediately adjacent to Student Computer Lab

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Vinyl comp. tile
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- (2) 36" wide x 18" deep x 7' high cabinets (non-metallic)
- ±25 lf of open wall mtd. shelves, 12" deep

MOVEABLE FURNISHINGS AND EQUIPMENT

- Computer racks as necessary to support Student Computer Lab (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Adequate cooling for multiple computers

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to all computer racks

LIGHTING

- Fluorescent troffers

TELEPHONE/DATA

- Provide data as necessary to all computer racks
- Provide for wireless data

M-5 Small Conference Room 250 s.f.**M-5****SPACE QUANTITY:** 1 meeting area**FUNCTION**

- Provide meeting space to support teaching and research activities of faculty and students.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 12-15 Visitors

DESIRABLE ADJACENCY

- Accessible to all faculty and students
- Adjacent to Small Seminar/Conference Room

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30
- STC 40 for operable partition

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Projection screen
- (2) 6' wide x 4' high white boards
- Operable partition (STC 51) between Conference Rooms M-5 & M-6

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- (4) 30"x60" tables
- (15) Stackable chairs
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

**ELECTRICAL
POWER**

- 120V convenience outlets
- 120V power in floor near center of room

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide data at each wall and in floor near center of room
- Provide for wireless data

COMMON AREA
INDIVIDUAL SPACE OUTLINE

M-6 Small Seminar/Conference Room 250 s.f.

M-6

SPACE QUANTITY: 1 meeting area

FUNCTION

- Provide meeting space to support teaching and research activities of faculty and students.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 12-15 Visitors

DESIRABLE ADJACENCY

- Accessible to all faculty and students
- Adjacent to Small Conference Room

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30
- STC 40 for operable partition

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Projection screen
- (2) 6' wide x 4' high white boards
- Operable partition (STC 51) between Conference Rooms M-5 & M-6

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4) 30"x60" tables
- (15) Stackable chairs
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power in floor near center of room

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide data at each wall and in floor near center of room
- Provide for wireless data

M-7 Informal Meeting Areas 250 s.f. total**M-7**

SPACE QUANTITY: 3 (dispersed throughout the building, totaling 250 s.f.)

FUNCTION

- To provide for impromptu meetings among faculty, researchers and students

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4 each area

DESIRABLE ADJACENCY

- On major circulation routes

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels or as appropriate with adjacent spaces

LIGHTING

- Artificial and, if possible, natural

FIXED EQUIPMENT

- 4' x 4' white board in each area

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3-4) Lounge chairs in each area
- (2) End tables
- Coffee table
- (2) Table lamps
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V convenience outlets

LIGHTING

- Indirect fluorescent lighting
- Incandescent accent lighting

TELEPHONE/DATA

- Provide data at (1) location

COMMON AREA
INDIVIDUAL SPACE OUTLINE

M-8 Media/Display/Exhibit Area 250 s.f.
(UUSS)

M-8

SPACE QUANTITY: 1

FUNCTION

- To exhibit and display the work done by UUSS, including real time examples of seismograph information being received.
- To provide an area where the news media can gather and meet with UUSS representatives following seismic events.
- An area to inspire students and show them some of the work being done in Geology & Geophysics, particularly in relation to seismology.
- To function as part of the lobby and building entrance.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 10-15

DESIRABLE ADJACENCY

- Adjacent to, and collocated with, main building entrance lobby
- Accessible to all building occupants and visitors
- Away from UUSS office spaces

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet or special stone flooring
- Walls Painted gypsum board with upgraded finishes such as wood or stone where appropriate
- Ceiling Combination of exposed structure and acoustically treated ceiling panels

LIGHTING

- Artificial and natural

ACOUSTICS

- NC 40

SECURITY

- Open to the public whenever the building is open
- Security Cameras, if required (by Owner)

SPECIAL FEATURES

- Special seismic bracing and strengthening features of the building should be exposed and celebrated in this area
- As much glass as possible for maximum exposure to building occupants and visitors
- If possible, a two story space is desirable

FIXED EQUIPMENT

- Helicorder Drum(s) (by Owner)
- Wall mounted monitor screens (by Owner)
- Display panels showing where signals are originating (by Owner)
- Other Seismograph Station information as may be desirable (by Owner)

MOVEABLE FURNISHINGS AND EQUIPMENT

- Various pieces of equipment for display, exhibit and educational purposes (by Owner)
- Computer stations for display and exhibit (by Owner)
- Maps (by Owner)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V power to all displays and equipment

LIGHTING

- Indirect fluorescent lighting
- Dimmable incandescent track lighting to highlight displays and exhibits

TELEPHONE/DATA

- Multiples data locations as required for displays and exhibits
- Assume (3-4) computers and/or monitors

**M-9 Common Display/Museum/
Exhibit Area 1,250 s.f.**

M-9

SPACE QUANTITY: 1

FUNCTION

- To exhibit and display the work done by the Department of Geology & Geophysics.
- To highlight the scope and diversity of research being done in the department.
- An area to inspire students and show them some of the opportunities in Geology & Geophysics.
- To function as part of the lobby and building entrance.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 30-50

DESIRABLE ADJACENCY

- Adjacent to, and collocated with, main building entrance lobby
- Accessible to all building occupants and visitors

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Special stone flooring as appropriate
- Walls Painted gypsum board with upgraded finishes such as wood or stone where appropriate
- Ceiling Combination of exposed structure and acoustically treated ceiling panels

LIGHTING

- Artificial and natural

ACOUSTICS

- NC 40

SECURITY

- Open to the public whenever the building is open
- Security Cameras, if required (by Owner)

SPECIAL FEATURES

- Special distinct areas to highlight the various areas of strength within the department
- As much glass as possible for maximum exposure to building occupants and visitors
- If possible, a two story space is desirable

FIXED EQUIPMENT

- A stratigraphy column or wall, if possible
- An area to highlight Hydrology concepts, with moving water if possible (needs to be discussed with Maintenance)
- Wall mounted monitor screens (by Owner)
- Various display panels (by Owner)
- Other Geology & Geophysics information as may be desirable (by Owner)

MOVEABLE FURNISHINGS AND EQUIPMENT

- Various pieces of equipment for display, exhibit and educational purposes (by Owner)
- Computer stations for display and exhibit (by Owner)
- Maps (by Owner)
- Displays of collections of various rocks, minerals, etc. (by Owner)
- Displays of paleo collections (by Owner)
- Special displays, such as the skeleton of early human (by Owner)
- Other displays, both permanent and temporary, as desired (by Owner)

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- As required by Hydrology Exhibit, if possible

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V power to all displays and equipment

LIGHTING

- Indirect fluorescent lighting
- Dimmable incandescent track lighting to highlight displays and exhibits

TELEPHONE/DATA

- Multiple data locations as required for displays and exhibits
- Assume (3-4) computers and/or monitors

COMMON AREA
INDIVIDUAL SPACE OUTLINE

M-10 Common Fabrication 600 s.f.
Workshop

M-10

SPACE QUANTITY: 1 workshop area
shared between USSS
and Dept. of Geology
& Geophysics

FUNCTION

- To fabricate, repair, and maintain
Department and Seismograph Stations
equipment.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4

DESIRABLE ADJACENCY

- Near elevator
- Near loading area if possible
- Near Equipment/Parts storage and other
storage areas
- Near USSS Seismic Network Work Area, if
possible.

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Sealed Concrete
- Walls Painted CMU or concrete
- Ceiling Open to structure

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces

SECURITY

- Keyed lock

SPECIAL FEATURES

- Space must accommodate 20' lengths of
pipe
- Double doors required to accommodate
4'x8' sheets of plywood, etc.

FIXED EQUIPMENT

- 8'x4' white board
- Approx. 4'x8' work bench w/steel top
- Approx. 4'x8' work bench w/wood top
- Approx. 8' long x 6' high rack for holding
pipes and coils of wire (re-use existing if
possible)

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- Work tool and storage cabinets
(existing, by Owner)
- Band saw (existing, by Owner)
- Drill Press (2) (existing, by Owner)
- Lathe (existing, by Owner)
- Grinders (2) (existing, by Owner)
- (Other Equipment?)

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Ventilation fan

PLUMBING

- Large work sink w/sediment trap

ELECTRICAL

POWER

- 120V convenience outlets
- 120V and 208V power to equipment
- Power drops to work tables

LIGHTING

- Direct fluorescent lighting

TELEPHONE/DATA

- Provide telephone and data outlet at one
location

8.4 COMMON CLASSROOMS & TEACHING LABS

INDIVIDUAL SPACE OUTLINES

N

		<u>Net Square Feet</u>
N.	Common Classrooms	
	1. Flexible Classroom for 30 (2 @ 750)	1,500
	2. Flexible Classroom for 40	1,000
	3. Fixed Lecture Hall for 80	1,200
		3,700

COMMON CLASSROOMS
INDIVIDUAL SPACE OUTLINES

N-1 Flexible Classroom

750 s.f.

N-1

SPACE QUANTITY: 2

FUNCTION

- Provide space for teaching activities.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 30 Students
- 1 Instructor

DESIRABLE ADJACENCY

- Easily accessible to students

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet tile over raised floor.
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Podium equipped with light, screen and AV controls
- 20 lf of counter 24" deep, open below
- (2) 6'x4' white boards
- 12' projection screen

MOVEABLE FURNISHINGS AND EQUIPMENT

- (30) student chairs
- (15) 30"x 72" adjustable height tables
- Ceiling mounted projector (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power in floor arranged for flexible use

LIGHTING

- Indirect fluorescent lighting
- Lighting control package

TELEPHONE/DATA

- Provide floor outlets to accommodate flexible seating locations, as well as podium location
- Provide for wireless access

COMMON CLASSROOMS
INDIVIDUAL SPACE OUTLINE

N-2 Flexible Classroom

1000 s.f.

N-2

SPACE QUANTITY: 1

FUNCTION

- Provide space for teaching activities.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 40 Students
- 1 Instructor

DESIRABLE ADJACENCY

- Easily accessible to students

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet tile over raised floor.
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Podium equipped with light, screen and AV controls
- 20 lf of counter 24" deep, open below
- (2) 6'x4' white boards
- 12' projection screen

MOVEABLE FURNISHINGS AND EQUIPMENT

- (40) student chairs
- (20) 30"x 72" adjustable height tables
- Ceiling mounted projector (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power in floor arranged for flexible use

LIGHTING

- Indirect fluorescent lighting
- Lighting control package

TELEPHONE/DATA

- Provide floor outlets to accommodate flexible seating locations, as well as podium location
- Provide for wireless access

N-3 Fixed Lecture Hall**1200 s.f.****N-3****SPACE QUANTITY:** 1 lecture hall**FUNCTION**

- Provide space for teaching and meeting activities of faculty.
- Provide area for 3D visualization.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 80

DESIRABLE ADJACENCY

- Easily accessible to faculty and students

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Combination acoustically hard and soft surfaces

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

SPECIAL FEATURES

- Tiered seating levels built up from floor slab. Provide area at front of room for wheelchairs and, if possible, an accessible ramp to another seating level.

FIXED EQUIPMENT

- (80) fixed tablet arm seats
- (4) 6'x4' white boards
- (2) 10' projection screens (locate adjacent or at perimeter of white boards)
- Podium equipped with light, screen and AV controls

MOVEABLE FURNISHINGS AND EQUIPMENT

- Ceiling mounted projector or projectors (by Owner)
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V outlets at perimeter walls, and at every row of seats
- 120V floor outlet location for specialized projection

LIGHTING

- Zoned lighting options
- Direct fluorescent lighting
- Direct incandescent lighting (dimnable)
- Pathway lighting if necessary

TELEPHONE/DATA

- Provide data outlets at each row of seating , as well as podium
- Provide for wireless access

AUDIO/VISUAL

- Provide for ceiling mounted digital projector(s)
- Provide for audio system (microphone at podium, clip on/wireless microphone, speakers, etc.)
- CD/DVD player (by Owner)

COMMON CLASSROOMS
INDIVIDUAL SPACE OUTLINE

O

	<u>Net Square Feet</u>
O. Teaching Labs	
1. Geotechnical Engineering & Hydrology_____	600
2. Mineral & Petrology (2 spaces @ 600)_____	1,200
3. Optics_____	900
4. Paleontology & Sedimentary Geology_____	750
5. GIS/Visualization, Natural Disasters, Computer Layout_____	750
	4,200

TEACHING LABS

INDIVIDUAL SPACE OUTLINES

O-1 Geotechnical Engineering and Hydrology 600 s.f.**O-1****SPACE QUANTITY: 1****FUNCTION**

- Teaching for study of geological engineering and hydrology.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 18 students +1 instructor

DESIRABLE ADJACENCY

- Near other Teaching Labs if possible
- Easily accessible for students

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (4) 8'x4' white boards
- ± 28 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ±18 lf of wall cabinets above, 12" deep
- 48" w x 24" d x 7' h storage cabinet
- (12) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (9) 30"x60" sturdy, but moveable tables for students (with power and data capability)
- (18) Adjustable task chairs on casters
- Ergonomic lab stool
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical design criteria for labs

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air
- Vacuum
- Floor Drain

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (18) computers
- Provisions for wireless capability

TEACHING LABS
INDIVIDUAL SPACE OUTLINE

O-2 Mineralogy & Petrology 600 s.f. each

O-2

SPACE QUANTITY: 2 – with an operable partition between

FUNCTION

- Teaching lab for mineralogy & petrology and other areas of study.
- Should function as two independent teaching labs or one large teaching lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 16 students + 1 instructor (each)

DESIRABLE ADJACENCY

- Near other Teaching Labs, if possible
- Easily accessible to students
- Near west end of building is best

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Suspended acoustic lay-in panels

LIGHTING

- Artificial and natural (windows are required, preferable west facing)

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30
- STC 40 for operable partition

SECURITY

- Keyed lock

SPECIAL FEATURES

- Two doors to facilitate division into two labs
- Lab tops to be resistant to scratching from rocks. Consider linoleum, stone, steel, etc.

FIXED EQUIPMENT (each space)

- (2) 8'x4' white boards
- ± 18 lf of base cabinet with lab top, 30" deep, with doors and drawers below (lockable)
- ±14 lf of wall cabinets above, 12" deep (lockable)
- (2) 48" w x 24" d x 7' h storage cabinets for samples (lockable)
- Operable partition to divide room
- Projection screen
- (10) Coat hooks
- (16) Student "cubbies" for backpacks, etc., approx. 18" w. x 16" h. x 18" d.

MOVEABLE FURNISHINGS AND EQUIPMENT (each space)

- (8) 30"x60" sturdy but moveable tables for students (with power & data capability)
- (16) Adjustable task chairs on casters
- Ergonomic lab stool
- Microscopes (by Owner)
- Various pieces of lab top equipment (by Owner)
- Ceiling mtd. projector (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum
- Floor Drain

O-2 Mineralogy & Petrology

O-2

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table and (2) at lab counter (high speed internet access)
- Assume (16) computers (each room)
- Provisions for wireless capability

TEACHING LABS
INDIVIDUAL SPACE OUTLINE

O-3 Optics

900 s.f.

O-3

SPACE QUANTITY: 1 – Capable of being divided into 2 with an operable partition

FUNCTION

- Teaching lab to study mineralogy & petrology and other areas of study through microscopy
- Teaching students proper use of microscopes

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 24 students + 1 instructor

DESIRABLE ADJACENCY

- Near other Teaching labs if possible
- Near Microscope labs

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Suspended acoustic lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- 8'x4' white board at front of room
- 4'x4' white board at front of room
- ± 44 lf of base cabinet with lab top, 30" deep, with doors and drawers below (lockable)
- ±36 lf of wall cabinets above, 12" deep (lockable)
- (4) 48" w x 24" d x 7' h storage cabinets for samples (lockable)
- Projection screen
- (20) coat hooks
- Operable partition to divide room

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6) 48"x48" sturdy but moveable tables for microscopes (with power & data capability)
- (24) Adjustable task chairs on casters
- (2) Ergonomic lab stools
- (24) Microscopes (by Owner)
- Various pieces of lab top equipment (by Owner)
- Ceiling mtd. projector (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

O-3 Optics

O-3

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (4) at each table and (2) at lab counters (high speed internet access)
- Assume (24) computers
- Provisions for wireless capability

TEACHING LABS
INDIVIDUAL SPACE OUTLINE

O-4 Paleontology & Sedimentary Geology
750 s.f.

O-4

SPACE QUANTITY: 1

FUNCTION

- Teaching lab for paleontology, sedimentary geology and other areas of study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 20 students + 1 instructor

DESIRABLE ADJACENCY

- Near other Teaching Labs, if possible
- Easily accessible to students
- Near Earth History and Paleobiology faculty

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Suspended acoustic lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

SPECIAL FEATURES

- Lab tops to be resistant to scratching from rocks. Consider linoleum, stone, steel, etc.

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 18 lf of base cabinet with lab top, 30" deep, with doors and drawers below (lockable)
- ± 10 lf of wall cabinets above, 12" deep (lockable)
- (2) 48" w x 24" d x 7' h storage cabinets for samples (lockable)
- Projection screen
- (20) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (10) 30"x60" sturdy but moveable tables for students (with power & data capability)
- (20) Adjustable task chairs on casters
- Ergonomic lab stool
- Microscopes (by Owner)
- Various pieces of equipment (by Owner)
- Ceiling mtd. projector (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air
- Vacuum
- Floor Drain

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table and (2) at lab counter (high speed internet access)
- Assume (20) computers
- Provisions for wireless capability

**O-5 GIS/Visualization, Natural Disaster,
Computer Layout 750 s.f.****O-5****SPACE QUANTITY: 1****FUNCTION**

- Teaching lab for study of spatial relations between geological phenomena.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 24 students + 1 instructor

DESIRABLE ADJACENCY

- Near other Teaching Labs, if possible
- Easily accessible to students
- Near west end of building is best

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board (magnetic walls)
- Ceiling Suspended acoustic lay-in panels

LIGHTING

- Artificial
-

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock

SPECIAL FEATURES

- Extended ceiling height (approx. 12' if possible) to accommodate project needs

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 18 lf of base cabinet with lab top, 30" deep, with doors and drawers below (lockable)
- ±14 lf of wall cabinets above, 12" deep (lockable)
- (2) 48" w x 24" d x 7' h storage cabinets for samples (lockable)
- (20) coat hooks

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- (12) 36"x72" sturdy but moveable tables for students (with power & data capability)
- 35" x 120" map table with (20) map drawers below
- (24) Adjustable task chairs on casters
- Ergonomic lab stool
- Ceiling mtd. projector (by Owner)
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical design criteria for labs

ELECTRICAL**POWER**

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each table

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table and (2) at map table (high speed internet access)
- Assume (24) computers
- Provisions for wireless capability

TEACHING LABS
INDIVIDUAL SPACE OUTLINE

8.5 COMMON RESEARCH LABS & AREAS

(Lab Tech for each group is shown in 8.2 Areas of Strength)

INDIVIDUAL SPACE OUTLINES

P

	<u>Net Square Feet</u>
P. Chemistry Group	
1. ICP-MS-Radiogenic Isotopes Clean Room Lab_____	640
2. Wet Chemistry Prep Lab_____	460
3. Stable Isotope Lab_____	620
4. XRF & XRD Lab_____	500
5. Igneous Petrology Lab_____	320
6. Geochemistry Lab_____	640
7. HPLC-GC-TOC Lab_____	640
8. Microbiology Lab_____	460
9. Noble Gas Lab_____	920
10. CFC Lab_____	320
GROUP:	5,520

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-1 ICP-MS-Radiogenic Isotopes
Clean Room Lab 640 s.f.

P-1

SPACE QUANTITY: 1

FUNCTION

- Research lab to study isotopic composition.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers and students

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within “area of strength”

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring (Anti Static)
- Walls Painted gypsum board. Glass at walls adjacent to public space
- Ceiling Epoxy-painted gypsum board or Mylar faced ceiling tile

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Double doors
- Vibration sensitive.
- Airlock
- Clean-Room design and construction protocols.

FIXED EQUIPMENT

- (2) 8’x4’ white boards
- ± 20 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ± 16 lf of wall cabinets above, 12” deep
- 48”w x 24”d x 7’ h storage cabinet
- (2) Fume hoods
- Wall-mounted brackets for securing gas cylinders.
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 12 lf portable instrument bench, 36’ deep, with 2 keyboard trays, lower shelf, capable of holding 600-1000 lbs of equipment.
- Various pieces of lab top equipment (by Owner)
- Hydrogen generator, laser ablation system, ICP-MS, autosampler (by Owner)
- Milli-Q (by Owner)
- (1) Commercial size refrigerators
- (2) Ergonomic task chairs
- (2) Ergonomic lab stools
- Fire extinguisher
- Bottled gasses: Hydrogen, Helium, Argon, Oxygen (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for better than Class 10,000 Clean Rooms
- Meet needs of plasma and vacuums system exhaust (to maintain a constant negative pressure $>4\text{m}^3/\text{min}$ space $<8\text{m}^3/\text{min}$ space)
- Meet equipment requirements for cooling.

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air, natural gas, vacuum – at hood
- D.I. water
- Available chilled water for equipment cooling system.
- Floor drain

P-1 ICP-MS-Radiogenic Isotopes
Clean Room Lab

640 s.f.

P-1

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each instrument and piece of equipment
- 120V plug strip at all counters
- Single or three phase 15A at water recirculator.
- Single phase 5.5A at heat exchanger.
- Single phase 30A circuit ICP-MS with NEMA-L6-30R receptacle
- UPS with generator backup
- Separate panels for lab systems outlets and convenience outlets
- Emergency off push button for systems outlets.
- Uninterruptable power as determined by equipment or Owner

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each seating area/desk and (2) at each lab counter and as necessary to instruments (high speed internet access: 1 at ICP-MS)
- Assume (4) computers
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-2 Wet Chemistry Prep Lab 460 s.f.

P-2

SPACE QUANTITY: 1

FUNCTION

- Chemistry stock room and prep lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers and students

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Double doors

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 20 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 16 lf of wall cabinets above, 12" deep
- ± 22 lf of island base cabinet with lab top, back to back 30" deep, with knee space below
- 48" w x 24" d x 7' h storage cabinet
- 40-50 l.f. shelving in one area stacked to height of 7'-0"
- (2) Fume hoods
- Glassware drying racks at sinks.
- Rack for bottled gasses & liquids
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- Analytical balance, microbalance, wet chemistry setup, and various pieces of lab top equipment (by Owner)
- Automated glassware washing system
- (6) Chemical storage cabinets (by Owner)
- (2) Ergonomic task chairs
- (2) Ergonomic lab stools
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- (2) Lab sinks in counter
- Compressed air
- Natural gas
- Vacuum
- D.I. water
- Plumbing for automated glassware washing system.

P-2 Wet Chemistry Prep Lab 460 s.f.

P-2

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk and to island counters in center of room
- 120V plug strip at counters
- Power for automated glassware washing system.

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at lab counter (high speed internet access)
- Assume (2) computers
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-3 Stable Isotope Lab

620 s.f.

P-3

SPACE QUANTITY: 1

FUNCTION

- Research lab to study isotopic composition of rocks, minerals, synthetic materials, and other natural materials.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers and students

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board. Glass at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30
- Acoustic absorption within room is very important. Instruments are noisy.
- A separate space is to be provided to house compressors. This space must have complete separation acoustically from the general lab area.

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Double doors

FIXED EQUIPMENT

- 4'x4' white board
- ± 32 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ±27 lf of wall cabinets above, 12" deep
- ±20 lf of island base cabinet w/lab top, 30" deep, back to back in center of room, open below
- (4) 48" w x 24" d x 7' h storage cabinets
- 48" w x 24" d x 7' h cabinet with shallow drawers for samples
- Rack for bottled gases
- Fume hood (hydrofluoric acid)
- Small fume hood (for bromine pentafluoride)
- (4) Coat hooks
- Support racks (unistrut) for isotope extraction lines.
- (3) Racks for extraction lines; each approximately 8' long, 5' high, on a table 8' x 2' x 27" h. These racks are to be designed in consultation with researcher.

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) 30"x60" tables/desks
- (2) Ergonomic task chairs
- (2) Ergonomic lab stools
- Mass Spectrometer(220V, 16A, 50-75 psi comp. air) with associated mounting racks, table, pumps, computers, cooling units, vibration dampening, etc. (by Owner)
- Desk top optical microscopes (by Owner)
- (3) Water recirculators (by Owner)
- Oven (by Owner)
- (2) Constant temperature water baths (by Owner)
- RF furnace (220V, 24A, water cooled) (by Owner)
- (3) Glass line setups (by Owner)
- Laser aided silicate extractor with rack system (by Owner)
- Bottled gases: oxygen, nitrogen, etc. (by Owner)
- (2) Trash receptacles

P-3 Stable Isotope Lab**620 s.f.****P-3****MECHANICAL****HVAC**

- See Mechanical design criteria for labs
- Ventilation required for (3) mechanical oil vacuum pumps and instrument pumps and compressors.
- Stable temperature (within $\pm 1^{\circ}\text{C}$) required for Mass Spectrometer

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air
- Natural gas
- Vacuum
- D.I. water (filtered)
- Access to distilled water (nearby)
- Available chilled water for equipment cooling systems
- Floor drain

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V and/or 220V power to each table/desk and to racks in center of room. Racks require (2) 220V, 100A, lines for mass spectrometers and other analytical equipment. These lines should have independent grounding and high voltage stability characteristics.
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (3) computers
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-4 XRF & XRD Lab

500 s.f.

P-4

SPACE QUANTITY: 1

FUNCTION

- Research lab for X-ray diffraction and X-ray fluorescence study of rocks, minerals and other materials.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within “area of strength”

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board.
- Ceiling Open to structure

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Double doors

FIXED EQUIPMENT

- 4’x4’ white board
- ± 32 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ±24 lf of wall cabinets above, 12” deep
- (2) 48”w x 24”d x 7’ h storage cabinet
- Rack for bottled gasses
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30”x60” tables/desks
- (4) Ergonomic task chairs
- Ergonomic lab stool
- X-ray fluorescence instrument (by Owner)
- X-ray defraction instrument (by Owner)
- Future Mass Spectrometer (by Owner)
- Bottled gasses: oxygen, nitrogen, etc. (by Owner)
- Oven (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- Stable temperature (within ±1°C) required for Mass Spectrometer (future)

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air
- Natural gas
- Vacuum
- D.I water (filtered)
- Available chilled water for equipment cooling systems

P-4 XRF & XRD Lab

P-4

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk and to each instrument
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and instrument and (2) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-5 Igneous Petrology Lab

320 s.f.

P-5

SPACE QUANTITY: 1

FUNCTION

- Research lab to study the physics and chemistry of vulcanism.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2 researchers

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- 8'x4' white board
- ± 36 lf of base cabinet with lab top, 30" deep, with doors and drawers below (16 lf to have 24" w x 4" h drawers - ±56 drawers)
- ±26 lf of wall cabinets above, 12" deep
- (4) 48" w x 24" d x 7' h storage cabinets
- Fume hood
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (8) 30"x60" tables/desks
- (4) Ergonomic task chairs
- Ergonomic lab stool
- Flame photometer (by Owner)
- Various desk top optical microscopes (by Owner)
- Various desk top analytical balances (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- Ventilation required

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Natural gas
- Vacuum

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

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CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-6 Geochemistry Lab

640 sf

P-6

SPACE QUANTITY: 1

FUNCTION

- Research lab for stable isotope geochemistry.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers and students

DESIRABLE ADJACENCY

- Adjacent to HPLC-GC-TOC lab
- Near other Chemistry Labs
- Near other offices and labs within “area of strength”
- Near Ultraclean ICP-MS-Radiogenic Isotopes area and Microbiology Lab

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board. Glass, in limited amounts, at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial only

ACOUSTICS

- Isolate from adjacent spaces
- STC 45
- NC 30
- Acoustic absorption within room is very important. Instruments are noisy.

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- ± 24 sf area enclosed by blackout curtain to contain 4 lf seating height counter
- Double doors

FIXED EQUIPMENT

- (2) 8’x4’ white boards
- ± 45 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ± 30 lf of wall cabinets above, 12” deep
- ± 28 lf of island base cabinet w/ lab top, 30” deep back to back in center of room, open below
- 48”w x 24”d x 7’ h storage cabinet
- (2) Fume hoods
- Glassware drying racks at sinks
- Rack for bottled gasses & liquids
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- Ion chromatograph, UV-VIS spectrophotometer, gas chromatograph and various pieces of lab top equipment (by Owner)
- (2) Refrigerators
- (1) Freezer
- (3) Ergonomic task chairs
- (2) Ergonomic lab stools
- Bottled gasses: CO2 (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air, natural gas, vacuum – at fume hoods and at valved outlets dropped from ceiling-mounted tree
- D.I. water (filtered)
- Access to distilled water (nearby)
- Floor drain

P-6 Geochemistry Lab

640 sf

P-6

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each instrument and piece of equipment
- 120V plug strip at all counters
- Uninterruptable power to refrigerators and freezer

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each seating area/desk and (2) at each lab counter and as necessary to instruments (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-7 HPLC-GC-TOC Lab

640 sf

P-7

SPACE QUANTITY: 1

FUNCTION

- Research lab for organic compounds.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers and students

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board. Glass, in limited amounts, at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial only

ACOUSTICS

- STC 45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Double doors

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 50 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 30 lf of wall cabinets above, 12" deep
- ± 28 lf of island base cabinet w/ lab top, 30" deep back to back in center of room, open below
- 48" w x 24" d x 7' h storage cabinet
- (2) Fume hoods
- Glassware drying rack at sink
- Rack for bottled gasses & liquids
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- GC/FID, TOC, GC, UV Spectrometer, HPLC, and various pieces of lab top equipment (by Owner)
- Drying oven (by Owner)
- (2) Refrigerator (by Owner)
- (1) Freezer
- (2) Ergonomic task chairs
- (2) Ergonomic lab stools
- Bottled gasses: CO₂, He, N₂, high purity air (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air, natural gas, vacuum – at fume hoods and at valved outlets dropped from ceiling-mounted tree
- D.I. water (filtered)
- Access to distilled water (nearby)
- Floor drain

P-7 HPLC-GC-TOC Lab 640 sf

P-7

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each instrument and piece of equipment
- 120V plug strip at all counters
- Dedicated circuit at HPLC
- Uninterruptable power to : 2 outlets at column experiment pumps, 4 outlets at equipment (labeled)

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each seating area/desk and (2) at each lab counter and as necessary to instruments (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-8 Microbiology Lab

460 s.f.

P-8

SPACE QUANTITY: 1

FUNCTION

- Research lab for microbiological processes.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers and students

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within “area of strength”
- Near Gas Recharge Lab

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board. Glass, in limited amounts, at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial only

ACOUSTICS

- STC 45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Double doors

FIXED EQUIPMENT

- (2) 8’x4’ white boards
- ± 30 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ± 26 lf of wall cabinets above, 12” deep
- ± 28 lf of island base cabinet w/ lab top, 30” deep back to back in center of room, open below
- 48”w x 24”d x 7’ h storage cabinet
- (1) Laminar flow hood (by Owner),
- (1) Fume hood
- Glassware drying rack at sink
- Rack for bottled gasses & liquids
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- Centrifuge, sterilizer, shaker table, refrigerator, incubator, bioferograph, and various pieces of lab top equipment (by Owner)
- Refrigerator
- (3) Ergonomic task chairs
- (2) Ergonomic lab stools
- Bottled gasses: CO2 (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed, natural gas, vacuum – at laminar flow hood and fume hood and at valved outlets dropped from ceiling-mounted tree.
- D.I. water
- Floor drain

P-8 Microbiology Lab

460 s.f.

P-8

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each instrument and piece of equipment
- 120V plug strip at all counters
- 208V, 12A single phase outlet at centrifuge
- Uninterruptable power to: freezer, refrigerator and shaker table

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each seating area/desk and (2) at each lab counter and as necessary to instruments (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-9 Noble Gas Lab 920 s.f.

P-9

SPACE QUANTITY: 1

FUNCTION

- Research lab to study isotope hydrology and dissolved gasses.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 4-6 researchers and students

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within "area of strength"
- Near Gas Recharge Lab

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board. Glass, in limited amounts, at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial only

ACOUSTICS

- Isolate from adjacent spaces
- STC 45
- NC 30
- Acoustic absorption within room is very important. Instruments are noisy.
- A separate space is to be provided to house compressors. This space must have complete separation acoustically from the general lab area.

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Vibration sensitive.

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 72 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ±48 lf of wall cabinets above, 12" deep
- 48" w x 24" d x 7' h storage cabinet
- Rack for bottled gasses & liquids
- (4) coat hooks
- Support racks (unistrut approximately 10' long, extending from floor to deck above) for isotope extraction lines. Rack must be capable of mounting 1/2" aluminum rods. These racks are to be designed in consultation with researcher.

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4) 30"x60" tables/desks for computers
- Mass Spectrometer with process table, including (3) rotary vane pumps, (2) turbo pumps. Fixed in place with associated mounting racks, tables, pumps, computers, cooling units, vibration dampening, etc. (by Owner)
- High Vacuum Extraction Line including (2) rotary vein pumps, (1) turbo pump. Fixed in place with associated mounting racks, tables, pumps, computers, cooling units, vibration dampering, etc. (by Owner)
- Tritium Extraction Line with table, including (1) rotary vein pump, vacuum line. Fixed in place with associated mounting racks, tables, pumps, computers, cooling units, etc. (by Owner)
- (2) Counter top ovens (by Owner)
- Refrigerator (by Owner)
- Various pieces of lab top equipment (by Owner)
- (4) Ergonomic task chairs
- (2) Ergonomic lab stools
- Bottled gasses: oxygen, nitrogen, etc. (by Owner)
- (2) Trash receptacles

P-9 Noble Gas Lab**P-9****MECHANICAL****HVAC**

- See Mechanical design criteria for labs
- Ventilation required for instrument vacuum pumps
- Stable temperature (within $\pm 1^{\circ}\text{C}$) required for Mass Spectrometer

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air – at counters and to instruments
- Natural gas – at counters and to instruments
- Vacuum – at counters and to instruments
- D.I. water (filtered)
- Access to distilled water (nearby)
- Available chilled water for equipment cooling systems
- Floor drain

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V and 220V power to each instrument and piece of equipment
 - Mass Spectrometer:
110V and 220V, 90A
 - High Vacuum Extr:
110V, 60A
 - Tritium Extr:
110V, 40A
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table/desk and (2) at each lab counter and as necessary to instruments (high speed internet access)
- Assume (8) computers + (4-5) computers associated with Mass Spectrometer
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

P-10 CFC Lab

320 s.f.

P-10

SPACE QUANTITY: 1

FUNCTION

- Research lab to study dissolved gasses, particularly CFC's

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2 researchers

DESIRABLE ADJACENCY

- Near other Chemistry Labs
- Near other offices and labs within "area of strength"
- Near Noble Gas Lab

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl sheet flooring
- Walls Painted gypsum board. Glass, in limited amounts, at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial only

ACOUSTICS

- Isolate from adjacent spaces
- STC 45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 25 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ±22 lf of wall cabinets above, 12" deep
- Fume hood
- Rack for bottled gasses (adjacent to Gas Chromatograph)
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x60" table/desk for computers
- Ergonomic task chair
- Ergonomic lab stool
- CFC line/Gas Chromatograph, with mounting table. Fixed in place with associated racks, pumps, computers, etc. (by Owner)
- Various pieces of lab top equipment (by Owner)
- Bottled gasses: oxygen, nitrogen, etc. (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs
- Ventilation required for instrument vacuum pumps

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air – at counters and to instruments
- Natural gas – at counters and to instruments
- Vacuum – at counters and to instruments
- Note: No refrigeration lines and nothing with CFC's to be located in or adjacent to this lab

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters
- Gas Chromatograph – 120V, 40A

P-10 CFC Lab

P-10

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table/desk and (2) at each lab counter and as necessary to instruments (high speed internet access)
- Assume (2)computers + computer associated with Gas Chromatograph
- Provisions for wireless capability

CHEMISTRY GROUP
INDIVIDUAL SPACE OUTLINE

Q

	<u>Net Square Feet</u>
Q. Scope & Beam Group	
1. Electron Microprobe_____	500
2. Microscope Research Labs_____	800
3. TIRF Lab_____	320
4. Atomic Force Microscope Lab_____	320
5. Ore Petrology Research Lab_____	240
6. Fluid Inclusion Lab_____	160
GROUP:	2,340

SCOPE & BEAM GROUP
INDIVIDUAL SPACE OUTLINE

Q-1 Electron Microprobe 500 s.f.

Q-1

SPACE QUANTITY: 1

FUNCTION

- Research lab to study materials under the electron microprobe
- Serves also as a teaching lab for advanced students

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-10 researchers and students

DESIRABLE ADJACENCY

- Near other Scope & Beam Labs
- Near other offices and labs within “area of strength”

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board.
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial, dimmable incandescent only

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Provide sound absorbing divider wall (full height) between Electron Microprobe and pump systems, water chiller and carbon coater.
- Clean room design.

FIXED EQUIPMENT

- (1) 8’x4’ white boards
- 2’x4’ tack board
- ± 26 lf of base cabinet with lab top, 30” deep, with doors and drawers below (shallow drawers)
- ±20 lf of wall cabinets above, 12” deep
- (2) 48”w x 24”d x 7’ h storage cabinets
- Rack for bottled gasses
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) 30”x60” tables/desks for computers (or custom built work station)
- (3) Ergonomic task chairs
- Electron Microprobe (by Owner)
- Power and Pump Systems for Electron Microprobe (by Owner)
- Water Recirculation/Chiller (By Owner)
- Carbon coater (by Owner)
- Bottled gasses: oxygen, nitrogen, argon, liquid nitrogen, etc. (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for Class 10,000 Clean Room
- Ventilation required
- Stable temperature (within ±1°C) required

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air – at counter and instruments
- Vacuum – at counter and instruments
- Available chilled water for equipment cooling systems

Q-1 Electron Microprobe

Q-1

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V and 220V power to each table/desk and to various instruments and machines
 - Microprobe:
220V, 250A, requires dedicated breaker box, isolated, separate ground
- 120V plug strip at counters

LIGHTING

- Dimmable incandescent lighting only

TELEPHONE/DATA

- Provide (2) at each table/desk and (2) at each lab counter and as necessary for computer attached to Electron Microprobe (high speed internet access)
- Assume (8) computers
- Provisions for wireless capability

**SCOPE & BEAM GROUP
INDIVIDUAL SPACE OUTLINE**

Q-2 Microscope Research Lab(s) 800 s.f.

Q-2

SPACE QUANTITY: 1 space, capable of being divided into 3 spaces of 200 sf, 200 sf, and 400 sf

FUNCTION

- Research lab to study mineralogy, ore petrology, sedimentary petrology and other areas of study through microscopy
- Area to prepare samples for further research study.
- It is possible that one of the areas will be used as a small teaching lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3 researchers
- Up to 6 students

DESIRABLE ADJACENCY

- Near other Scope & Beam Labs
- Near other offices and labs within “area of strength”
- Near Optics teaching lab

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30
- STC 40 for operable partition

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Three doors to facilitate division into three labs
- Lab tops to be resistant to scratching from rocks. Consider linoleum, stone, steel, etc.
- This space should be interior, away from any windows.
- 200 sf darkenable room/area for sedimentary petrology and epifluorescence microscopes.

FIXED EQUIPMENT

- (3) 6’x4’ white boards
- (3) 4’x4’ white boards
- ± 32 lf of base cabinet with lab top, 30” deep, with doors and drawers below (lockable)
- 26 lf of wall cabinets above, 12” deep (lockable)
- (4) 48”w x 24”d x 84” h storage cabinets for samples (lockable)
- (2) Operable partition to divide room
- Projection screen

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6) 48”x48” sturdy but moveable tables for microscopes (with power & data capability)
- (6) Ergonomic task chairs
- (2) Ergonomic lab stools
- (4) Mobile computer station carts (by Owner)
- Research Microscopes (by Owner)
- (1) Petrographic microscope (by Owner)
- Various pieces of lab top equipment (by Owner)
- Ceiling mtd. projector (by Owner)
- (3) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

Q-2 Microscope Research Lab(s)

Q-2

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting
- Dimmable incandescent lighting at the partitioned dark space

TELEPHONE/DATA

- Provide (4) at each table and (2) at lab counter (high speed internet access)
- Assume (12) computers
- Provisions for wireless capability

SCOPE & BEAM GROUP
INDIVIDUAL SPACE OUTLINE

Q-3 TIRF Lab 320 s.f.

Q-3

SPACE QUANTITY: 1

FUNCTION

- Research lab for direct observation of micro-scale colloid attachment-detachment dynamics via total internal reflection fluorescence microscopy (TIRF).

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers

DESIRABLE ADJACENCY

- Near other Scope & Beam Labs
- Near other offices and labs within "area of strength"
- Near Atomic Force Microscope Lab

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces; lockable doors to adjacent labs okay.
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Vibration sensitive
- Fully light proof room
- Clean room design

FIXED EQUIPMENT

- (2) 6'x4' white boards
- ±16 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 12 lf of wall cabinets above, 12" deep
- 48" w x 24" d x 7' h storage cabinet for samples
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 48"x 72" 1000 lb isolation table (by Owner)
- (4) Ergonomic lab stools
- (2) Microscopes (by Owner)
- TIRF equipment (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for Class 10,000 Clean Room

PLUMBING

- Lab sink in counter
- Compressed air, vacuum valve outlets dropped from ceiling-mounted trees
- Vacuum

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters
- Uninterruptable power desired at 4 outlets for TIRF machine

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

Q-4 Atomic Force Microscopy Lab 320 s.f.**Q-4****SPACE QUANTITY:** 1**FUNCTION**

- Research lab for nano-scale, imaging and surface force measurement.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers

DESIRABLE ADJACENCY

- Near other Scope & Beam Labs
- Near other offices and labs within "area of strength"
- Near connection to WBB to allow adjacency to Jakub Nalaskowski and Jan Miller in Metallurgical Engineering

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces, lockable doors to adjacent labs okay.
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Vibration sensitive
- Clean room design

FIXED EQUIPMENT

- (2) 4'x4' white boards
- ± 16 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 12 lf of wall cabinets above, 12" deep
- ± 6 lf of island base cabinet w/lab top, 30" deep, back to back in center of room, open below
- 48" w x 24" d x 7' h storage cabinet for samples
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" tables/desks for computers and microscopes
- (1) Ergonomic task chairs
- (2) Atomic force microscopes (by Owner)
- (2) Ergonomic lab stools
- Glassware drying rack at sink
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical design criteria for Class 10,000 Clean Room

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air, vacuum valve outlets dropped from ceiling-mounted trees
- Vacuum

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters
- UPS desired

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table/desk and (1) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

**SCOPE & BEAM GROUP
INDIVIDUAL SPACE OUTLINE**

Q-5 Ore Petrology Lab

240 s.f.

Q-5

SPACE QUANTITY: 1

FUNCTION

- Research lab to study ore petrology.
- Research is done with microscopes and computers.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers

DESIRABLE ADJACENCY

- Near other Scope & Beam Labs
- Near other offices and labs within “area of strength”
- Near Fluid Inclusion lab

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (2) 4’x4’ white boards
- ±5 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- 5 lf of wall cabinets above, 12” deep
- 48”w x 24”d x 7’ h storage cabinet for samples
- Projection screen
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (5) 30”x60” tables/desks for computers and microscopes
- 36” x 60” map table with (10) map drawers below
- (5) Ergonomic task chairs
- (4-5) microscopes (by Owner)
- Ceiling mtd. projector (by Owner)
- Ergonomic lab stool
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table/desk and (1) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

Q-6 Fluid Inclusion Lab 160 s.f.

Q-6

SPACE QUANTITY: 1

FUNCTION

- Research lab to study fluid inclusion.
- Research is done with microscopes and computers.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2 researchers

DESIRABLE ADJACENCY

- Near other Scope & Beam Labs
- Near other offices and labs within “area of strength”
- Near Ore Petrology Lab

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- 4’x4’ white board
- ± 5 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ±5 lf of wall cabinets above, 12” deep
- 48”w x 24”d x 7’ h storage cabinet for samples
- Rack for bottled gasses
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4) 30”x60” tables/desks for computers and microscopes
- (4) Ergonomic task chairs
- (4) Microscopes (by Owner)
- Bottled gasses: nitrogen, liquid nitrogen, etc. (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each table/desk and (1) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

SCOPE & BEAM GROUP
INDIVIDUAL SPACE OUTLINE

R

	<u>Net Square Feet</u>
R. Materials & Mechanics Group	
1. Structure Deformation Lab_____	400
2. Sedimentary Geology Lab_____	400
3. Thermal Conductivity Lab_____	160
4. Fluid Dynamics Lab_____	320
5. Paleo Lab_____	400
6. Multipurpose Map Lab_____	320
7. Paleoclimate Lab_____	320
8. Electrical Conductivity Research Lab_____	320
9. Magnetism Lab (remains in WBB)	
10. Scientific Drilling Lab (remains in WBB)	
11. Rock Mechanics Lab (move to WBB)	
GROUP:	<u>2,640</u>

MATERIALS & MECHANICS GROUP
INDIVIDUAL SPACE OUTLINES

R-1 Structural Deformation Lab 400 s.f.**R-1****SPACE QUANTITY: 1****FUNCTION**

- Research lab to study structural geology, neotectonics, and engineering geology.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2–6 researchers and students

DESIRABLE ADJACENCY

- Near other Materials & Mechanics Labs
- Near other offices and labs within “area of strength”

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (3) 8’x4’ white boards
- ± 28 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ±20 lf of wall cabinets above, 12” deep
- 48”w x 24”d x 7’ h storage cabinet
- 48”w x 24”d x 7’ h cabinet with shallow drawers for samples
- (6) coat hooks

**MOVEABLE FURNISHINGS AND
EQUIPMENT**

- (4) 30”x60” tables/desks
- (2) 36” x 72” moveable tables for layout and lab work
- (4) Ergonomic task chairs
- (2) Ergonomic lab stools
- Petrographic microscope (by Owner)
- Various pieces of lab top equipment (by Owner)
- Trash receptacle

**MECHANICAL
HVAC**

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

**ELECTRICAL
POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (6) computers
- Provisions for wireless capability

MATERIALS & MECHANICS GROUP
INDIVIDUAL SPACE OUTLINE

R-2 Sedimentary Geology Lab

400 s.f.

R-2

SPACE QUANTITY: 1

FUNCTION

- Research lab to study stratigraphy and sedimentology.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-6 researchers and students

DESIRABLE ADJACENCY

- Near other Materials & Mechanics Labs
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS
FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

SPECIAL FEATURES

- Lab tops to be resistant to scratching from rocks. Consider linoleum, stone, steel, etc.

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 28 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ±20 lf of wall cabinets above, 12" deep
- 48" w x 24" d x 7' h storage cabinet
- (2) 48" w x 24" d x 7' h cabinet with shallow drawers for samples
- (6) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6) 30"x60" tables/desks
- (6) Ergonomic task chairs
- (2) Ergonomic lab stool
- Microscopes (by Owner)
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum
- Floor drain

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (6) computers
- Provisions for wireless capability

R-3 Thermal Conductivity Lab**160 s.f.****R-3****SPACE QUANTITY: 1****FUNCTION**

- Research lab to study thermal geophysics.
- Area to prepare samples for further research study.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2 researchers

DESIRABLE ADJACENCY

- Near other Materials & Mechanics Labs
- Near other offices and labs within “area of strength”

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (3) 8’x4’ white boards
- ± 28 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ±20 lf of wall cabinets above, 12” deep
- 48”w x 24”d x 7’ h storage cabinet
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4) 30”x60” tables/desks
- (2) Ergonomic task chairs
- Ergonomic lab stool
- Divider bar for thermal conductivity (by Owner)
- Various pieces of lab top calibration equipment (by Owner)
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

MATERIALS & MECHANICS GROUP
INDIVIDUAL SPACE OUTLINE

R-4 Fluid Dynamics Lab

320 s.f.

R-4

SPACE QUANTITY: 1

FUNCTION

- Research lab to study surface water hydrology.
- Serves also as a teaching lab for Fluid Dynamics.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 4-8 researchers and students

DESIRABLE ADJACENCY

- Near other Materials & Mechanics Labs
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space
- Ceiling Open to structure

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 28 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ±20 lf of wall cabinets above, 12" deep
- 48"w x 24"d x 7' h storage cabinet
- 48"w x 24"d x 7' h cabinet with shallow drawers for samples
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" tables/desks
- (3) 36" x 72" tables for map layout and to hold flume
- (2) 36" w x 7' h bookcases
- (2) Ergonomic task chairs
- Ergonomic lab stool
- Table top hydrology flume (by Owner)
- Map cabinets (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum
- Floor drain

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk and to island tables in center of room
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter, and (2) for island work tables (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

R-5 Paleo Lab**400 s.f.****R-5****SPACE QUANTITY: 1****FUNCTION**

- Research lab to study invertebrate paleoecology and ichnology.
- Serves also as a teaching lab for paleontology and paleoecology.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-4 researchers and students

DESIRABLE ADJACENCY

- Near other Materials & Mechanics Labs
- Near other offices and labs within “area of strength”

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (2) 8’x4’ white boards
- ± 16 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ±12 lf of wall cabinets above, 12” deep
- (2) 48”w x 24”d x 7’ h storage cabinet
- (2) 48”w x 24”d x 7’ h cabinet with shallow drawers for samples
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4) 30”x60” tables/desks
- (3) 36”x 72” tables for layout and research
- (2) 36” w x 7’ h bookcases
- (4) Ergonomic task chairs
- Ergonomic lab stool
- (2) Trash receptacle

MECHANICAL**HVAC**

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter and (2) for island work tables (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

MATERIALS & MECHANICS GROUP
INDIVIDUAL SPACE OUTLINE

R-6 Multipurpose Map Lab 320 s.f.

R-6

SPACE QUANTITY: 1

FUNCTION

- Research lab to study geologic mapping strategies.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 4-8 researchers and students

DESIRABLE ADJACENCY

- Near other Materials & Mechanics Labs
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 12 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 8 lf of wall cabinets above, 12" deep
- 48" w x 24" d x 7' h storage cabinet
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6) 30"x60" tables/desks
- (2) 36" x 72" tables for map layout
- (2) 36" w x 7' h bookcases
- (6) Ergonomic task chairs
- (2) Ergonomic lab stool
- Map cabinets (by Owner)
- Ceiling mtd. projector (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)

ELECTRICAL

POWER

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk and to island tables in center of room
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter, and (2) for island work tables (high speed internet access)
- Assume (8) computers
- Provisions for wireless capability

R-7 Paleoclimate Lab**320 s.f.****R-7****SPACE QUANTITY: 1****FUNCTION**

- Research lab to study micropaleontology, paleoceanography and marine geology..
- Serves also as a teaching lab for Micropaleontology.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 1-4 researchers and students

DESIRABLE ADJACENCY

- Near other Materials & Mechanics Labs
- Near other offices and labs within “area of strength”

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board. Glass at walls adjacent to public space.
- Ceiling Open to structure.

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed lock (possibly card key)

FIXED EQUIPMENT

- (2) 8’x4’ white boards
- ± 16 lf of base cabinet with lab top, 30” deep, with doors and drawers below
- ± 12 lf of wall cabinets above, 12” deep
- 48”w x 24”d x 7’ h storage cabinet
- (2) 48”w x 24”d x 7’ h cabinet with shallow drawers for samples
- (4) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (4) 30”x60” tables/desks
- (2) 36” x 72” tables for layout and prep
- (4) Ergonomic task chairs
- Ergonomic lab stool
- Microscopes (by Owner)
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical design criteria for labs

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air
- Vacuum

ELECTRICAL**POWER**

- See Electrical design criteria for labs
- 120V convenience outlets
- 120V power to each table/desk
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (1) at each table/desk and (2) at lab counter (high speed internet access)
- Assume (4) computers
- Provisions for wireless capability

MATERIALS & MECHANICS GROUP
INDIVIDUAL SPACE OUTLINE

R-8 Electrical Conductivity 320 s.f.
Research Lab

R-8

SPACE QUANTITY: 1

FUNCTION

- Research lab to study electrical conductivity and electromagnetic fields.
- Research is done on computers and specialized physical/electrical equipment.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 5-10 researchers
- 2 Visitors

DESIRABLE ADJACENCY

- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (2) 8'x4' white boards
- (2) 40" w x 30" d x 84" h storage cabinets
- ± 45 lf of wall mounted bookshelves above table/desks
- (10) coat hooks
- ± 3 lf of base cabinet, 30" deep, with sink
- Projection screen (coordinate size and location with audio visual equipment)

MOVEABLE FURNISHINGS AND EQUIPMENT

- (10) 30"x60" table/desks for computer work
- (10) Ergonomic work chairs on casters
- (2) Trash receptacles
- Ceiling mounted video projector (by Owner)

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- Sink in base cabinet

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk
- Back up power supply (120V)

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk (high speed internet access)
- Assume (20) computers
- Provisions for wireless capability
- Provide data connection to INSCC

S

	<u>Net Square Feet</u>
S. Computer Research Group	
1. Earthquake Seismology/Crustal Deformation Lab _____	620
2. Yellowstone Volcanic Observatory _____	160
3. Thermal Geophysics Lab _____	320
4. Sedimentary Geo/Basins Lab _____	320
5. Tomography Computer Lab _____	320
6. Electromagnetic Computer Lab _____	320
7. Techtonics Visualization Computer Lab _____	320
	GROUP: 2,380

COMPUTER RESEARCH GROUP
INDIVIDUAL SPACE OUTLINES

**S-1 Earthquake Seismology/
Crustal Deformation Lab 620 s.f.**

S-1

SPACE QUANTITY: 1

FUNCTION

- Research lab to study seismology and geophysics
- Pursue NSF "Earthscope" activities

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 8-10 students and researchers
- 2 Visitors

DESIRABLE ADJACENCY

- Near Yellowstone Volcanic Observatory
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Linoleum or vinyl comp. tile
- Walls Painted gypsum board
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (4) 8'x4' white boards
- (2) 4'x4' white boards
- ± 18 lf of base cabinet/work counter, 30" deep, with cabinets above
- (3) 40" w x 30" d x 7' h storage cabinets
- Projection screen (coordinate size and location with audio visual equipment)
- (10) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (9) 30"x60" desks
- 60"x120" island work table with power and data capability
- (12) Ergonomic task chairs on casters
- Map cabinets (by Owner)
- Ceiling mounted video projector (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- Stainless steel sink mtd. in counter top

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk and to island table
- 120V plug strip at counters

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk, (2) at work counter, and (4) at island work table (high speed internet access)
- Assume (20) computers
- Provisions for wireless capability

COMPUTER RESEARCH GROUP
INDIVIDUAL SPACE OUTLINE

S-2 Yellowstone Volcanic Observatory 160 s.f.

S-2

SPACE QUANTITY: 1

FUNCTION

- Research Lab to study seismology, particularly related to the Yellowstone area. Research is done on computers.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-6 researchers

DESIRABLE ADJACENCY

- Near Earthquake Seismology/Crustal Deformation Lab
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (2) 8'x4' white boards
- (2) 4'x4' white boards
- ± 12 lf of base cabinet/work counter, 30" deep, with cabinets above
- (6) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) 30"x60" desk tables for computer work
- (6) Ergonomic task chairs on casters
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk
- 120V plug strip at counter

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk and (2) at work counter (high speed internet access)
- Assume (6-8) computers
- Provisions for wireless capability

S-3 Thermal Geophysics Lab**320 s.f.****S-3****SPACE QUANTITY: 1****FUNCTION**

- Research Lab to study thermal geophysics. Research is done on computers. Interaction among researchers in lab is very important.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 6-8 students and researchers

DESIRABLE ADJACENCY

- Near Graduate Students involved in Internal Processes & Dynamics of the Earth, and Surface Processes & Paleoclimate
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 45 lf of wall mtd. book shelves
- (8) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6) 30"x60" desk tables for computer work
- 36"x96" table for common work and meeting
- (8) Ergonomic task chairs on casters
- (2) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk and in floor near table
- 120V plug strip at counter

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk and in floor near table (high speed internet access)
- Assume (6-8) computers
- Provisions for wireless capability

**COMPUTER RESEARCH GROUP
INDIVIDUAL SPACE OUTLINE**

S-4 Sedimentary Geo/Basins Lab 320 s.f.

S-4

SPACE QUANTITY: 1

FUNCTION

- Research Lab to study sedimentology and stratigraphy via basin modeling. Interaction among researchers in lab is very important.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 6-8 students and researchers

DESIRABLE ADJACENCY

- Near Graduate Students involved in Surface Processes & Paleoclimate and Earth Resources and Exploration.
- Near other offices and labs associated with Tectonics Research (eg., Bruhn, Bartley, and students in Structural Geology and GIS labs

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board (magnetic walls)
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 10 lf of base cabinet with lab top, 30" deep, with doors and drawers below
- ± 6 lf of wall cabinets above, 12" deep
- ± 45 lf of wall mtd. bookshelves
- (2) 48" w x 24" d x 7' h storage cabinets
- (8) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (6) 30"x60" desk tables for computer work
- 36"x96" table for common work and meeting
- (4) 5 drawer vertical filing cabinets
- (8) Ergonomic task chairs on casters
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- Lab sink in counter (with sediment trap)
- Compressed air – at counter

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk and in floor near table
- 120V plug strip at counter

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk and in floor near table (high speed internet access)
- Assume (3-5) computers with dual monitors and printers
- Provisions for wireless capability

S-5 Tomography Computer Lab 320 s.f.**S-5****SPACE QUANTITY: 1****FUNCTION**

- Research Lab to study seismology and geophysics with space for modeling and seismic imaging. Research is done on computers.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 8-12 students and researchers

DESIRABLE ADJACENCY

- Near Graduate Students involved in Earth Resources and Exploration, and Water and Earth Systems.
- Near other offices and labs within "area of strength"

**ARCHITECTURAL REQUIREMENTS
FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 45 lf of wall mtd. book shelves
- (2) 40" w x 30" d x 7' h storage cabinets
- Projection screen (coordinate size and location with audio visual equipment)
- (8) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (8) 30"x60" desk tables for computer work
- 36"x96" table for common work and meeting
- Ceiling mounted video projector (by Owner)
- (12) Ergonomic task chairs on casters
- (2) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk and in floor near table

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk and in floor near table (high speed internet access)
- Assume (8-12) computers
- Provisions for wireless capability

COMPUTER RESEARCH GROUP
INDIVIDUAL SPACE OUTLINE

S-6 Electromagnetic Computer Lab 320 s.f.

S-6

SPACE QUANTITY: 1

FUNCTION

- Research lab to study electromagnetics and geophysics with space for electromagnetic imaging.
- Research is done on computers.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 8-12 students and researchers
- 2 Visitors

DESIRABLE ADJACENCY

- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 45 lf of wall mounted bookshelves above table/desks
- (2) 40" w x 30" d x 84" h storage cabinets
- (10) coat hooks
- Projection screen (coordinate size and location with audio visual equipment)

MOVEABLE FURNISHINGS AND EQUIPMENT

- (10) 30"x60" table/desks for computer work
- (10) Ergonomic work chairs on casters
- (2) Trash receptacles
- Ceiling mounted video projector (by Owner)

MECHANICAL

HVAC

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL

POWER

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk
- Back up power supply (120V)

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk (high speed internet access)
- Assume (20) computers
- Provisions for wireless capability
- Provide data connection to INSCC

**S-7 Techtonics Visualization Computer Lab
320 s.f.****S-7****SPACE QUANTITY: 1****FUNCTION**

- Research Lab to study thermal geophysics. Research is done on computers. Interaction among researchers in lab is very important.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 6-8 students and researchers

DESIRABLE ADJACENCY

- Near Graduate Students involved in Internal Processes & Dynamics of the Earth, and Surface Processes & Paleoclimate
- Near other offices and labs within "area of strength"

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board (magnetic walls)
- Ceiling Suspended lay-in acoustic panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent space
- STC 40-45
- NC 30

SECURITY

- Keyed lock

FIXED EQUIPMENT

- (2) 8'x4' white boards
- ± 45 lf of wall mtd. book shelves
- (2) 40" w x 24" d x 7' h storage cabinets
- Projection screen (coordinate size and location with audio visual equipment)
- (8) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (8) 30"x60" desk tables for computer work
- 36"x96" table for common work and meeting
- Ceiling mounted video projector (by Owner)
- (8) Ergonomic work chairs on casters
- (2) Trash receptacles

MECHANICAL**HVAC**

- See Mechanical design criteria

PLUMBING

- None

ELECTRICAL**POWER**

- See Electrical design criteria
- 120V convenience outlets
- 120V power to each desk and in floor near table

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide (2) at each desk and in floor near table (high speed internet access)
- Assume (6-8) computers
- Provisions for wireless capability

COMPUTER RESEARCH GROUP
INDIVIDUAL SPACE OUTLINE

8.6 TYPICAL OFFICES, RESEARCH SUPPORT LABS, ETC.

INDIVIDUAL SPACE OUTLINES

T-1 Typical Faculty Office 160 s.f.**T-1****SPACE QUANTITY:** 22 private offices**FUNCTION**

- Provide work space to support the teaching and research activities of faculty.
- Accommodate small conference, personal equipment and library, computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2-3 Visitors

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near graduate students
- Clustered within their "area of strength"

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 50 lf of bookshelves
- (2) 48" w x 12" d x 84" cabinets with shelves and doors
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer table (or equivalent office system)
- 4 high 42" wide lateral file
- Ergonomic desk chair
- (3) guest chairs
- 36" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate at least (2) computers

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-2 Typical Auxiliary Faculty Office 160 s.f.

T-2

SPACE QUANTITY: 6 private offices

FUNCTION

- Provide work space to support the teaching and research activities of auxiliary faculty.
- Accommodate small conference, personal equipment and library, computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2-3 Visitors

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near graduate students
- Clustered within their "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 50 lf of bookshelves
- (2) 48" w x 12" d x 84" cabinets with shelves and doors
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer table (or equivalent office system)
- 4 high 42" wide lateral file
- Ergonomic desk chair
- (3) guest chairs
- 36" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate at least (2) computers

T-3 Typical Emeritus Faculty Office 160 s.f.

T-3

SPACE QUANTITY: 4 private offices for 2
emeritus faculty in ea.

FUNCTION

- Provide work space to support the research activities of emeritus faculty.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 2

UNASSIGNED OCCUPANTS

- 2 Visitors total

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near other faculty
- Clustered within their "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 40 lf of bookshelves for each emeritus faculty
- (2) 4' x 4' white boards
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" desks with 42" computer return (with adjustable keyboard support) (or equivalent office system)
- (2) 4 high 30" wide lateral files
- (2) Ergonomic desk chairs
- (2) Guest chairs
- (2) Incandescent table lamps
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate (2) computers/desk

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-4 Typical Post Doc Office 160 s.f.

T-4

SPACE QUANTITY: 8 private offices for 2
 post docs in each

FUNCTION

- Provide work space to support the teaching and research activities of post docs.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 2

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near faculty
- Clustered within their "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 40 lf of bookshelves for each post doc
- (2) 4' x 4' white boards
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" desks with 42" computer return (with adjustable keyboard support) (or equivalent office system)
- (2) 4 high 30" wide lateral files
- (2) Ergonomic desk chairs
- (2) Guest chairs
- (2) Incandescent table lamps
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate (2) computers/desk

T-5 Upper Level Graduate Students 50 s.f.

T-5

SPACE QUANTITY: 64 work stations at
50 s.f. each
(dispersed through
building)

FUNCTION

- Work space for teaching and research for graduate students beyond 1st year.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 1/work station

UNASSIGNED OCCUPANTS

- Possibly 1-2 Visitors

DESIRABLE ADJACENCY

- Grouped near faculty and laboratories in their area of strength where possible
- Convenient to their research labs
- Convenient access to student visitors

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Keyed locks on all work station components

FIXED EQUIPMENT

- 4'x4' white board in each area
- coat hook in each work station

MOVEABLE FURNISHINGS AND EQUIPMENT

- Approximately 6'x8' open work station with file drawers and overhead storage with door
- Ergonomic task chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to each work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Data connection at each work station
- Anticipate (2) computers/station

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-6 1st Year Graduate Students 50 s.f.

T-6

SPACE QUANTITY: 11 work stations at
 50 s.f. each
 (in 1 or 2 areas)

FIXED EQUIPMENT

- 8'x4' white board in each area
- coat hook in each work station

FUNCTION

- Provide personal work space for teaching and research for 1st year graduate students.
- Accommodate computer use and small personal library.

MOVEABLE FURNISHINGS AND EQUIPMENT

- Approximately 6'x8' open work station with file drawers and overhead storage with doors
- Ergonomic task chair
- Trash receptacle

ASSIGNED OCCUPANTS

- 1/work station

MECHANICAL

HVAC

- See Mechanical Design Criteria

UNASSIGNED OCCUPANTS

- Possibly 1 Visitor

PLUMBING

- None

DESIRABLE ADJACENCY

- Grouped together in 1 or 2 areas to foster interaction among 1st year graduate students
- Convenient access for student visitors

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to each work station

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

LIGHTING

- Artificial and, if possible, natural

TELEPHONE/DATA

- Data connection at each work station
- Anticipate (1) computer/station

SECURITY

- Keyed locks on all work station components

T-7 Typical Research Support Lab 160 s.f.**T-7**

SPACE QUANTITY: 22 (adjacent to faculty offices)

FUNCTION

- Provide space for private research to support the work in the faculty members' "area of strength"
- Computer use and necessary storage of materials.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 1-2 Visitors

DESIRABLE ADJACENCY

- Immediately adjacent to each faculty office
- Direct access from public hallway or area without going through faculty office
- Access to faculty office is NOT to be through Research Support Lab
- The designer should discuss with faculty members the possibility of a door or opening between the Research Support lab and the Faculty office.

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ±6 lf base cabinet with lab top, 30" deep
- ±15 lf wall mounted cabinets with open shelving, 12" deep
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) 30"x60" table/desks
- Ergonomic task chair
- Ergonomic lab stool
- Trash receptacle
- Individual faculty members may select different moveable furnishings as necessary

MECHANICAL**HVAC**

- See Mechanical Design Criteria for lab spaces

PLUMBING

- Lab sink in counter (with sediment trap)

ELECTRICAL**POWER**

- 120V convenience outlets
- 120V power to each table or desk
- 120V plug strip above counter

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations in walls
- Provide data plug strip above counter
- Anticipate at least (4) computers

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-8 Typical Technician/Engineer 80 s.f.

T-8

SPACE QUANTITY: 8 semi-private office
 work stations at
 80 s.f. each
 (dispersed as
 necessary)

FUNCTION

- Office space for technician or engineer in charge of various labs or other research.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 1/work station

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Grouped near faculty and laboratories in their area of strength where possible
- Convenient to their research labs

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Keyed locks on all work station components

FIXED EQUIPMENT

- 8'x4' white board near work station

MOVEABLE FURNISHINGS AND EQUIPMENT

- Approximately 8'x10' semi-private work station with 6' high panels that can be closed or open, with file drawers and overhead storage with doors
- Door on work station where appropriate
- Ergonomic task chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V power to each work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Data connection at each work station
- Anticipate (2) computers/station

T-1 Typical Faculty Office 160 s.f.**T-1****SPACE QUANTITY:** 22 private offices**FUNCTION**

- Provide work space to support the teaching and research activities of faculty.
- Accommodate small conference, personal equipment and library, computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2-3 Visitors

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near graduate students
- Clustered within their "area of strength"

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 50 lf of bookshelves
- (2) 48" w x 12" d x 84" cabinets with shelves and doors
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer table (or equivalent office system)
- 4 high 42" wide lateral file
- Ergonomic desk chair
- (3) guest chairs
- 36" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL**HVAC**

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL**POWER**

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate at least (2) computers

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-2 Typical Auxiliary Faculty Office 160 s.f.

T-2

SPACE QUANTITY: 6 private offices

FUNCTION

- Provide work space to support the teaching and research activities of auxiliary faculty.
- Accommodate small conference, personal equipment and library, computer use.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 2-3 Visitors

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near graduate students
- Clustered within their "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 50 lf of bookshelves
- (2) 48" w x 12" d x 84" cabinets with shelves and doors
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- 30"x66" desk with 42" computer return (with adjustable keyboard support)
- 66" credenza or computer table (or equivalent office system)
- 4 high 42" wide lateral file
- Ergonomic desk chair
- (3) guest chairs
- 36" Ø conference table
- Incandescent table lamp
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate at least (2) computers

T-3 Typical Emeritus Faculty Office 160 s.f.

T-3

SPACE QUANTITY: 4 private offices for 2
emeritus faculty in ea.

FUNCTION

- Provide work space to support the research activities of emeritus faculty.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 2

UNASSIGNED OCCUPANTS

- 2 Visitors total

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near other faculty
- Clustered within their “area of strength”

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 40 lf of bookshelves for each emeritus faculty
- (2) 4' x 4' white boards
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" desks with 42" computer return (with adjustable keyboard support) (or equivalent office system)
- (2) 4 high 30" wide lateral files
- (2) Ergonomic desk chairs
- (2) Guest chairs
- (2) Incandescent table lamps
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate (2) computers/desk

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-4 Typical Post Doc Office 160 s.f.

T-4

SPACE QUANTITY: 8 private offices for 2
 post docs in each

FUNCTION

- Provide work space to support the teaching and research activities of post docs.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 2

UNASSIGNED OCCUPANTS

- 2 Visitors

DESIRABLE ADJACENCY

- Near teaching and research labs
- Near faculty
- Clustered within their "area of strength"

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45
- NC 30

SECURITY

- Keyed Lock

FIXED EQUIPMENT

- Equivalent of approximately 40 lf of bookshelves for each post doc
- (2) 4' x 4' white boards
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (2) 30"x60" desks with 42" computer return (with adjustable keyboard support) (or equivalent office system)
- (2) 4 high 30" wide lateral files
- (2) Ergonomic desk chairs
- (2) Guest chairs
- (2) Incandescent table lamps
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V Outlets

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations
- Anticipate (2) computers/desk

T-5 Upper Level Graduate Students 50 s.f.

T-5

SPACE QUANTITY: 64 work stations at
 50 s.f. each
 (dispersed through
 building)

FUNCTION

- Work space for teaching and research for graduate students beyond 1st year.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 1/work station

UNASSIGNED OCCUPANTS

- Possibly 1-2 Visitors

DESIRABLE ADJACENCY

- Grouped near faculty and laboratories in their area of strength where possible
- Convenient to their research labs
- Convenient access to student visitors

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Keyed locks on all work station components

FIXED EQUIPMENT

- 4'x4' white board in each area
- coat hook in each work station

MOVEABLE FURNISHINGS AND EQUIPMENT

- Approximately 6'x8' open work station with file drawers and overhead storage with door
- Ergonomic task chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to each work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Data connection at each work station
- Anticipate (2) computers/station

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-6 1st Year Graduate Students 50 s.f.

T-6

SPACE QUANTITY: 11 work stations at
 50 s.f. each
 (in 1 or 2 areas)

FIXED EQUIPMENT

- 8'x4' white board in each area
- coat hook in each work station

FUNCTION

- Provide personal work space for teaching and research for 1st year graduate students.
- Accommodate computer use and small personal library.

MOVEABLE FURNISHINGS AND EQUIPMENT

- Approximately 6'x8' open work station with file drawers and overheard storage with doors
- Ergonomic task chair
- Trash receptacle

ASSIGNED OCCUPANTS

- 1/work station

MECHANICAL

HVAC

- See Mechanical Design Criteria

UNASSIGNED OCCUPANTS

- Possibly 1 Visitor

PLUMBING

- None

DESIRABLE ADJACENCY

- Grouped together in 1 or 2 areas to foster interaction among 1st year graduate students
- Convenient access for student visitors

ELECTRICAL

POWER

- 120V convenience outlets
- 120V power to each work station

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

LIGHTING

- Artificial and, if possible, natural

TELEPHONE/DATA

- Data connection at each work station
- Anticipate (1) computer/station

SECURITY

- Keyed locks on all work station components

T-7 Typical Research Support Lab 160 s.f.**T-7**

SPACE QUANTITY: 22 (adjacent to faculty offices)

FUNCTION

- Provide space for private research to support the work in the faculty members' "area of strength"
- Computer use and necessary storage of materials.

ASSIGNED OCCUPANTS

- 1

UNASSIGNED OCCUPANTS

- 1-2 Visitors

DESIRABLE ADJACENCY

- Immediately adjacent to each faculty office
- Direct access from public hallway or area without going through faculty office
- Access to faculty office is NOT to be through Research Support Lab
- The designer should discuss with faculty members the possibility of a door or opening between the Research Support lab and the Faculty office.

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and natural

ACOUSTICS

- Isolate from adjacent spaces
- STC 40-45

SECURITY

- Keyed lock

FIXED EQUIPMENT

- ±6 lf base cabinet with lab top, 30" deep
- ±15 lf wall mounted cabinets with open shelving, 12" deep
- 6' x 4' white board
- (2) coat hooks

MOVEABLE FURNISHINGS AND EQUIPMENT

- (3) 30"x60" table/desks
- Ergonomic task chair
- Ergonomic lab stool
- Trash receptacle
- Individual faculty members may select different moveable furnishings as necessary

MECHANICAL**HVAC**

- See Mechanical Design Criteria for lab spaces

PLUMBING

- Lab sink in counter (with sediment trap)

ELECTRICAL**POWER**

- 120V convenience outlets
- 120V power to each table or desk
- 120V plug strip above counter

LIGHTING

- Indirect fluorescent lighting

TELEPHONE/DATA

- Provide at two locations in walls
- Provide data plug strip above counter
- Anticipate at least (4) computers

TYPICAL FACULTY OFFICES, RESEARCH LABS, ETC.
INDIVIDUAL SPACE OUTLINE

T-8 Typical Technician/Engineer 80 s.f.

T-8

SPACE QUANTITY: 8 semi-private office
 work stations at
 80 s.f. each
 (dispersed as
 necessary)

FUNCTION

- Office space for technician or engineer in charge of various labs or other research.
- Accommodate computer use and small personal library.

ASSIGNED OCCUPANTS

- 1/work station

UNASSIGNED OCCUPANTS

- None

DESIRABLE ADJACENCY

- Grouped near faculty and laboratories in their area of strength where possible
- Convenient to their research labs

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Carpet
- Walls Painted gypsum board
- Ceiling Suspended acoustical lay-in panels

LIGHTING

- Artificial and, if possible, natural

SECURITY

- Keyed locks on all work station components

FIXED EQUIPMENT

- 8'x4' white board near work station

MOVEABLE FURNISHINGS AND EQUIPMENT

- Approximately 8'x10' semi-private work station with 6' high panels that can be closed or open, with file drawers and overhead storage with doors
- Door on work station where appropriate
- Ergonomic task chair
- Trash receptacle

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- None

ELECTRICAL

POWER

- 120V power to each work station

LIGHTING

- Indirect fluorescent lighting
- Task lighting at work stations

TELEPHONE/DATA

- Data connection at each work station
- Anticipate (2) computers/station

8.7 PUBLIC SPACES & BUILDING SERVICES

INDIVIDUAL SPACE OUTLINES

U

U. Public Spaces

Entrances
Connector Link
Elevators
Toilet Rooms
Hallways (circulation routes)
Stairways

PUBLIC SPACES

INDIVIDUAL SPACE OUTLINES

U PUBLIC SPACES

U

Entrances: The main entrance should be on the east side on Level 2 and should enter into the new Connector Link. This entrance should have a vestibule and canopy protecting the main doors. The entrance and vestibule should be inviting and designed to fit visually with the new building as well as the Browning Bldg. An entrance element, such as an open pergola, should extend as far to the east as possible without impacting utilities. This open element should not only invite people to the new entrance, but also acknowledge the existing rock display east of the Browning Bldg.

Another outside entrance should be provided on Level 1 from the west into the Connector Link. A canopy protecting the entrance doors should also be provided at this entrance. Care needs to be taken during design to provide an inviting entrance from the west in view of the fact that it will most likely be through (or adjacent to) a service area.

A service entrance and vehicle loading area should be provided at Level 1 in the south/west area between the Sutton Bldg. and the Browning Bldg.

The possibility of a minor entrance on the north, coming directly from 100 South, should be investigated.

Connector Link: The Connector Link to the Browning Bldg. should provide the main entrance lobby into the complex and should be as open as possible with a two story space that contains Display/Exhibit Areas. Both Levels 1 & 2 should connect directly with the east hallway of the Browning Bldg. An open stair should connect Levels 1 and 2 within the Connector Link.

It is anticipated that the main entrance to the College of Mines & Earth Science Administration would be on Level 2 of the Connector Link and the Earthquake Information Center components of U. of U. Seismograph Stations, along with main computer rooms for the College and USS, would be on Level 1 of the Connector Link. Both the Media/Display/Exhibit Area (USS) and the Common Display/Museum/Exhibit Area should be included in the Connector Link.

At Level 3 a walkway should be provided between the Sutton Bldg. and the Browning Bldg. that connects with the Browning Bldg. east hallway.

The entire Connector Link should be as open as possible with glass to the east and west to exploit the views.

The floors of the Sutton Bldg. will not line up with all floors of the Browning Bldg. due to different floor to floor heights. The main entrance, on Level 2, should align floors of both buildings, therefore Level 1 is likely to be 2' below Browning Level 1 and Level 3 is likely to be 2' above Browning Level 3. ADA compliant ramp systems will be required at Levels 1 and 3.

PUBLIC SPACES
INDIVIDUAL SPACE OUTLINE

U

U

Elevators: The Sutton Bldg. should contain two elevators. Both should meet ADA requirements. One should be large enough and with sufficient capacity to serve as a means for moving collection and rock samples through the building. It is suggested that this elevator have interior dimensions of approximately 6' x 8' and a weight capacity of at least 4,500 lbs. Doors providing a clear opening of at least 4' should be provided on this elevator. During design, investigate actual clear dimensions, which will be required, based on max size of crated instruments.

An option to consider is both elevators centrally located in the building, immediately accessible from Sample Preparation, Collections/Curation and the Loading Area. A useful option, even though it may not be the most cost effective, may be one elevator toward the east end and one (the heavy duty elevator) toward the west end.

Toilet Rooms: Toilet rooms for each sex should be provided on every floor of the Sutton Bldg. Men's and women's toilet rooms toward the west on Level 1 should each include a shower to allow staff to clean up after field operations and to encourage bicycle use. All toilet rooms are to be ADA compliant.

See section on CODE ISSUES for an analysis of required plumbing fixtures.

FINISHES

- Floors Ceramic tile
- Walls Ceramic tile
- Ceilings Painted gypsum board

Hallways (circulation routes): Interior hallways and pedestrian circulation should be laid out as logically as possible and should connect with each other to help way finding. A major circulation route on all floors should be approximately ten feet wide to accommodate casual seating areas, display cases and other intrusions into the walking area. Circulation routes that separate labs from support spaces should be approximately six feet wide. Circulation routes serving laboratories should contain at least one emergency eye wash station in an alcove with a floor drain on each floor.

At the east and west ends of the building, the circulation should extend to the east and west walls which should be glazed. This will provide a welcome visual relief by allowing light and exterior views from the hallway areas. By crossing over at the east and west ends, the circulation routes will also provide excellent spaces for impromptu student/faculty gathering.

A new north/south circulation route near the east main entrance should connect directly with the Browning Bldg. hall on three levels.

Wherever possible, glass should be utilized in hallways and circulation routes to allow views into the teaching labs and research labs as well as other spaces.

SUGGESTED FINISHES

- Floors Natural stone or stone tile (if budget allows) in keeping with the concept of geology, otherwise carpet
- Walls Painted gypsum board with glass wherever possible
- Ceilings Suspended acoustic lay-in ceilings with exposed painted structure in certain feature areas

Stairways: At least two stairways should be provided, one at each end of the building. A stairway at the east will help with the connection to the Browning Bldg. and a stairway at the west will be advantageous for service and student access. Stairways that serve all four floors must be enclosed in 2 HR rated enclosures.

V

V. Building Services

1. Mechanical Rooms
2. Electrical Rooms
3. Telecom/Data Rooms
4. Janitor Rooms
5. Loading Area
6. Bicycle Storage Area (if possible)

BUILDING SERVICES
INDIVIDUAL SPACE OUTLINES

V-1 MECHANICAL ROOMS

V-1

- Main Mechanical Room near east end of Level 1 if possible

ARCHITECTURAL REQUIREMENTS

GENERAL

- As necessary for proper building functions – See Mechanical. Comply with University of Utah guidelines
- Access through large doors directly from the exterior if possible

FINISHES

- Floor Sealed concrete
- Walls CMU or concrete
- Ceiling Open to structure

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- See Mechanical Design Criteria

ELECTRICAL

POWER

- 120V outlets
- Power as necessary to mechanical equipment

LIGHTING

- Pendant hung fluorescent

SPECIAL FEATURES

Mechanical Rooms to be located such that excessive vibration through the building does not occur

BUILDING SERVICES
INDIVIDUAL SPACE OUTLINE

V-2 ELECTRICAL ROOMS

V-2

- Main Electrical Room near east end of Level 1 **± 200 s.f.**
- Electrical room on each level of the building **± 80 s.f. each**
- Conduit bank tie in to existing electrical in Browning Building as may be necessary.

ARCHITECTURAL REQUIREMENTS

GENERAL

- As necessary for proper building functions – See Electrical. Comply with University of Utah guidelines

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board or CMU, or concrete as occurs
- Ceiling Open to structure

MECHANICAL

HVAC

- See Mechanical Design Criteria

ELECTRICAL

POWER

- See Electrical Design Criteria

LIGHTING

- Pendant hung direct fluorescent

V-3 TELECOM/DATA ROOMS

V-3

- Telecom/data room on each level of the building **± 80 s.f. each**

ARCHITECTURAL REQUIREMENTS

GENERAL

- Utilitarian space – See Electrical. Comply with University of Utah guidelines.

FINISHES

- Floor Sealed concrete
- Walls Painted gypsum board, with Fire-treated, labeled plywood panels on walls to secure equipment
- Ceiling Open to structure

MECHANICAL

HVAC

- See Electrical Design Criteria

ELECTRICAL

POWER

- 120V outlets
- MDF/IDF as required

LIGHTING

- Pendant hung direct fluorescent

TELEPHONE/DATA

- See Electrical Design Criteria

BUILDING SERVICES
INDIVIDUAL SPACE OUTLINE

V-4 JANITOR ROOMS

V-4

- Janitor room on each level of the building
± 50 s.f. each

ARCHITECTURAL REQUIREMENTS

GENERAL

- Utilitarian space.
Comply with University
of Utah guidelines.

FINISHES

- Floor Quarry tile
- Walls Painted gypsum board,
ceramic tile at mop sink
- Ceiling Open to structure

FIXED EQUIPMENT

- ±24 lf of shelves from 2' to 7' h
- 48" w x 18" d x 7' h cabinet for supplies
- Mop/broom holder

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- Mop sink

ELECTRICAL

POWER

- 120V outlets

LIGHTING

- Pendant hung direct fluorescent

V-5 LOADING AREA

V-5

- Loading area on Level 1 immediately adjacent to service access for loading and unloading of field equipment
- Primarily an exterior area with a concrete loading platform at grade.

DESIRABLE ADJACENCY

- Near Common Fabrication Workshop
- Near Sample Preparation and Collection/Curation
- Near Common Storage Areas
- Near Elevator

SPECIAL FEATURES

- Double door in to building

MECHANICAL

HVAC

- None

PLUMBING

- Exterior freeze proof hose bib

ELECTRICAL

POWER

- 120V exterior water proof outlets

LIGHTING

- Exterior lighting

BUILDING SERVICES
INDIVIDUAL SPACE OUTLINE

V-6 BICYCLE STORAGE AREA
(if possible)

V-6

- If possible an interior bicycle storage area should be provided within a hallway or entry near the loading area on Level 1.
- This is not a discreet programmed space but an area within other space that can be used for the secure storage of bicycles.

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed concrete
- Walls CMU or concrete
- Ceiling Open to structure

DESIRABLE ADJACENCY

- Near loading area
- Near Elevator
- Near toilet rooms on Level 1 which have a shower

SPECIAL FEATURES

- Provide wall hooks (or other system) for securing bicycles. Provide as many as space will allow (25 desired).
- Stored bicycles must not interfere with functions of building hallways or entrances
- In addition, covered exterior storage for 35 bicycles is desired, if possible.

8.8 IVOR THOMAS HIGH-BAY SPACE

INDIVIDUAL SPACE OUTLINES

W

W. Ivor Thomas High-Bay Lab	<u>Net Square Feet</u>
(Remote location, adjacent to Bldg. 59)	
1. Milling Machine Area _____	700
2. Hot Press Area _____	350
3. Ore Receiving/Hooper/Bin Area _____	600
4. Pilot Scale Grinding Mill/Platform _____	500
5. Hydrocyclone Column Leaching/Platform _____	500
6. Iron Oxide/Flash Furnace/Platform _____	350
7. Particle Separation Lab _____	500
8. Service Area w/overhead crane _____	440
	3,940

The new Ivor Thomas High-Bay is to be constructed adjacent to Building 59, east of the new Sutton/Browning Building complex. Building 59 currently contains high-bay “industrial” type functions for the Department of Mining Engineering (part of the College of Mines and Earth Sciences).

The new Ivor Thomas High-Bay lab will provide space for those functions within the Department of Metallurgical Engineering (part of the College of Mines and Earth Sciences) that are required to leave the existing Ore Dressing and Ivor Thomas labs and require high-bay, or “industrial” type space.

This space is to be a single high-bay area (18’ to the underside of structure) within which the various functional areas occur without walls or partitions separating them. Low partitions (less than 6’-8” high) may be used to separate the Particle Separation Lab from other areas. The Ivor Thomas High-Bay Lab should be attached to Bldg. 59 (with expansion joints as needed) and access doors provided from the Ivor Thomas Lab into Bldg. 59.

For proper access to much of the equipment in the high-bay lab, a working platform constructed of steel grating and supported on steel pipe columns should extend around part of the interior perimeter. This platform should be approximately 8’ wide and approximately 9’ high (verify). Steel industrial type stairs should be provided to the platform at several locations.

In addition to floor drains and sand/sediment interceptors noted in the space outlines and plumbing criteria, there is a need for one or more pits to collect pulverized material. The number and location of these pits is to be determined by the designers, in consultation with the College and the Department of Metallurgical Engineering.

IVOR THOMAS HIGH-BAY LAB
INDIVIDUAL SPACE OUTLINES

W-1 Milling Machine Area 700 s.f.
(Metallurgical Engineering)

W-1

SPACE QUANTITY: 1 – within the high-bay lab

FUNCTION

- To replace the research and teaching functions of the milling machines currently located in the existing Ivor Thomas Lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3 researchers and students

DESIRABLE ADJACENCY

- Near Hot Press area
- Near Service area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls CMU or concrete
- Ceiling Open to structure, 18' clear height to structure

LIGHTING

- Artificial and natural

FIXED EQUIPMENT

- ±15 lf of work bench with steel top, 30" deep, with doors and drawers below (lockable)

MOVEABLE EQUIPMENT (by Owner)

- (3) Union Process Attrition Mills
- Jar Roller Ball Mill
- Planetary Mill
- (2) Ball Mills
- High Pressure Rolls
- Single Particle Roll Crusher

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Verify ventilation requirements

PLUMBING

- Water supply and slurry discharge required
- Floor drain

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- Power as required to each piece of equipment (verify):
 - Union Process Attrition Mills
208/240V
 - Jar Roller Ball Mill
110V
 - Planetary Mill
480V, 3ø
 - Ball Mills
220/440V
 - High Pressure Rolls
220V, 50KW, DC
 - Single Particle Roll Crusher
110V

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

DATA

- As required for any computers (verify)

IVOR THOMAS HIGH-BAY SPACE

INDIVIDUAL SPACE OUTLINE

W-2 Hot Press Area 350 s.f.
(Metallurgical Engineering)

W-2

SPACE QUANTITY: 1 – within the high-bay lab

FUNCTION

- To replace the research and teaching functions of the hot presses currently located in the existing Ivor Thomas Lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3 researchers and students

DESIRABLE ADJACENCY

- Near Milling Machine area
- Near Service area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls CMU or concrete
- Ceiling Open to structure,
18' clear height to structure

LIGHTING

- Artificial and natural

FIXED EQUIPMENT

- None

MOVEABLE EQUIPMENT (by Owner)

- 30 ton Centorr Controlled Atm. Hot Press including Power Supply and High Voltage Transformer
- Electrolytic Polishing Unit
- New Press

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Ventilation hood required

PLUMBING

- Cooling water required (min. 40 l/min.)
- Floor drain

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- Power as required for each piece of equipment (verify):
 - 30 ton Hot Press
480V, 225A, 3 ϕ
 - Electrolytic Polishing Unit
120V
 - New Press
(verify requirements)

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

DATA

- As required for any computers (verify)

**W-3 Ore Receiving/Hopper/Bin Area 600 s.f
(Metallurgical Engineering)****W-3****SPACE QUANTITY:** 1 – within the high-bay lab**FUNCTION**

- To replace the functions of the ore hopper and the ore receiving area currently located in the existing Ore Dressing Lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3 researchers and students

DESIRABLE ADJACENCY

- Near exterior w/direct truck service
- Near Service area
- Near Grinding Mill (for direct feed from hopper)

ARCHITECTURAL REQUIREMENTS**FINISHES**

- Floor Sealed Concrete
- Walls CMU or concrete
- Ceiling Open to structure, 18' clear height to structure

LIGHTING

- Artificial and natural

FIXED EQUIPMENT

- Hopper w/belt up to top and horizontal screw feed to Grinding Mill (by Owner)
- Steel grating platform for hopper to sit on to provide proper height for screw feed (verify size & height)
- Ventilation hood similar to existing (verify)
- (2-3) steel bins for ore receiving
- ±10' w x 10' h overhead door

MOVEABLE EQUIPMENT (by Owner)

- Equipment as necessary for proper operation of hopper (verify)

MECHANICAL**HVAC**

- See Mechanical Design Criteria
- Ventilation hood

PLUMBING

- Floor drain

ELECTRICAL**POWER**

- See Electrical Design Criteria
- 120V convenience outlets
- Power as required for each piece of equipment (verify)

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

DATA

- None

IVOR THOMAS HIGH-BAY SPACE
INDIVIDUAL SPACE OUTLINE

W-4 Pilot Scale Grinding Mill/ 500 s.f.
Platform
(Metallurgical Engineering)

W-4

SPACE QUANTITY: 1 – within the high-bay lab

FUNCTION

- To replace the research and teaching functions of the pilot scale grinding mill currently located in the existing Ore Dressing Lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4 researchers and students

DESIRABLE ADJACENCY

- Near Hopper area
- Near Service area
- Adjacent to steel grate working platform area

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls CMU or concrete
- Ceiling Open to structure, minimum 18' clear height to structure

LIGHTING

- Artificial and natural

FIXED EQUIPMENT

- Pilot Scale Grinding Mill (by Owner)
- Raised concrete or CMU base for grinding mill. approx. 40" h (verify size & height)
- Steel grating working platform (±8'w and ±9'h) at perimeter of this area

MOVEABLE EQUIPMENT (by Owner)

- Ball Mill (verify)
- Attritter (verify)
- Tank associated with grinding mill
- Equipment as necessary for proper operation (verify)
- 36" x 144" work bench with steel top

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Ventilation (verify)

PLUMBING

- Floor drain

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- Power as required for each piece of equipment (verify)

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

DATA

- As required for any computers (verify)

W-5 Hydrocyclone Column 500 s.f.
Leaching/Platform
(Metallurgical Engineering)

W-5

SPACE QUANTITY: 1 – within the high-bay lab

FUNCTION

- To replace the research and teaching functions of the Hydrocyclone Column Leaching currently located in the existing Ore Dressing Lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4 researchers and students

DESIRABLE ADJACENCY

- Near Service area
- Adjacent to steel grating working platform

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls CMU or concrete
- Ceiling Open to structure,
 18' clear height to structure

LIGHTING

- Artificial and natural

FIXED EQUIPMENT

- Steel grating working platform
(±8'w and ±9' h) at perimeter of this area

MOVEABLE EQUIPMENT (by Owner)

- Hydrocyclone Column Leaching system
- Equipment as necessary for proper operation (verify)
- 36" x 96" work bench with steel top

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Ventilation (verify)

PLUMBING

- Floor drain

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- Power as required for each piece of equipment (verify)

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

DATA

- As required for any computers (verify)

IVOR THOMAS HIGH-BAY SPACE
INDIVIDUAL SPACE OUTLINE

W-6 Iron Oxide/Flash Furnace/ 350 s.f.
Platform
(Metallurgical Engineering)

W-6

SPACE QUANTITY: 1 – within the high-bay lab

FUNCTION

- To replace the research and teaching functions of the Iron Oxide/Flash Furnace currently located in the existing Ore Dressing Lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 2-3 researchers and students

DESIRABLE ADJACENCY

- Near Service area
- Adjacent to steel grating working platform

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls CMU or concrete
- Ceiling Open to structure,
 18' clear height to structure

LIGHTING

- Artificial and natural

FIXED EQUIPMENT

- Steel grating working platform (±8'w and ±9' h) at perimeter of this area
- Ventilation hood similar to existing (verify)

MOVEABLE EQUIPMENT (by Owner)

- Bench scale Iron Oxide reduction system
- High Temperature Furnace
- Box Furnace
- Equipment as necessary for proper operation (verify)
- 36" x 96" work bench with steel top

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Ventilation hood required

PLUMBING

- Water
- Compressed air
- Natural gas
- Floor drain

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- Power as required for each piece of equipment (verify):
 - Iron Oxide Reduction System
240V, 100A
 - High Temperature Furnace
240V, 30A
 - Box Furnace
110V

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

DATA

- As required for any computers (verify)

W-7 Particle Separation Lab 500 s.f.
(Metallurgical Engineering)

W-7

SPACE QUANTITY: 1 – within the high-bay lab

FUNCTION

- To replace the research and teaching functions of the Laboratory currently located in the existing Ivor Thomas Lab.

ASSIGNED OCCUPANTS

- None

UNASSIGNED OCCUPANTS

- 3-4 researchers and students

DESIRABLE ADJACENCY

- Near Service area
- Away from Milling and Ore Dressing Areas
- Near exterior walls, corner is preferable

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls CMU or concrete, with low partitions (approx. 6' high) separating this area from other areas
- Ceiling Open to structure, no ceiling in this area

LIGHTING

- Artificial and natural

FIXED EQUIPMENT

- ±96 lf of base cabinet with lab top, 30" deep, with doors and drawers below (lockable)
- ±24 lf of wall cabinet above (where possible), 12" deep
- Rack for bottle gasses & liquids
- (3) coat hooks
- Fume hood

MOVEABLE FURNISHINGS & EQUIPMENT

- Various pieces of lab top equipment (by Owner)
- (2) Ergonomic lab stools
- Bottled gasses & liquids: oxygen, nitrogen, etc. (by Owner)
- (2) Trash receptacles

MECHANICAL

HVAC

- See Mechanical Design Criteria
- Ventilation required

PLUMBING

- (2) Lab sinks in counter (with sediment trap)
- Compressed air
- Natural gas

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- 120V plug strip at counters

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

DATA

- Provide (2) at each lab counter (high speed internet access)
- Assume (4) computers

IVOR THOMAS HIGH-BAY SPACE
INDIVIDUAL SPACE OUTLINE

W-8 Service Area 440 s.f.
(with overhead crane)
(Metallurgical Engineering)

W-8

SPACE QUANTITY: 1 – within the high-bay lab

FIXED EQUIPMENT

- Overhead crane (10 ton capacity)
- ±10' w x 10' h overhead door

FUNCTION

- To provide an area of service to all spaces within the high-bay lab.
- To allow vehicles into the high bay space.
- To provide extra room for any of the spaces within the high-bay lab which may require it from time to time.

MOVEABLE EQUIPMENT

- None

ASSIGNED OCCUPANTS

- None

MECHANICAL

HVAC

- See Mechanical Design Criteria

PLUMBING

- Floor drain
- Hose bib
- Wall mtd. work sink (with sediment trap)

UNASSIGNED OCCUPANTS

- None

ELECTRICAL

POWER

- See Electrical Design Criteria
- 120V convenience outlets
- Power as required for overhead crane

DESIRABLE ADJACENCY

- Accessible to all spaces within the high-bay lab
- Near exterior with direct truck service

LIGHTING

- Pendant hung direct fluorescent or H.I.D.

ARCHITECTURAL REQUIREMENTS

FINISHES

- Floor Sealed Concrete
- Walls Open to adjacent areas.
- Ceiling Open to structure, 18' clear height to structure

DATA

- Provide wall mtd. telephone at (1) location

LIGHTING

- Artificial and natural

8.9 OTHER SPACES REQUIRED TO BE RELOCATED
(Not part of the Sutton Geology & Geophysics Building Project)

INDIVIDUAL SPACE OUTLINES

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

OTHER SPACES INDIVIDUAL SPACE OUTLINES

Other spaces from existing Ore Dressing/Ivor Thomas Lab which will need to be relocated to the Browning Building – **Not a part of the Sutton Geology & Geophysics Building Project.**

<u>Metallurgical Engineering</u>	<u>Net Square Feet</u>
Uniaxial Compaction Press_____	350
Induction Heating Unit_____	150
	500
(3) MTS Systems & Hydraulic Power Supply_____	350
High Temperature Furnace_____	400
Plasma Reactor_____	400
Combination Synthesis (SHS)_____	234
	1,034
Labs_____	620
Offices_____	200
	820

Mining Engineering/Geology & Geophysics

Rock Mechanics Lab_____	1,000
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Other spaces from existing Mines Building which will **eventually** need to be relocated to the Browning Building when the Mines Building is demolished

<u>Metallurgical Engineering</u>	
Machine Area (107)_____	800
Office/Lab (107A)_____	400
Office/Lab (108)_____	240
	1,440

Approximate total space ultimately needed in WBB: 5,144 s.f.

Most of the listed spaces can best be accommodated on the 1st Floor of the Browning Building. Functions requiring heavy weight floors can be located east of Grid C, where the 1st Floor is slab on grade (approx. 5,000 s.f. could be available, which includes existing hallways).

Many of the functions relocating to the Browning Building will require additional head room. The existing ceilings can be removed and approximately 11' of head room obtained.

OTHER SPACES

INDIVIDUAL SPACE OUTLINES

9.0 MODULAR LAB CONCEPT

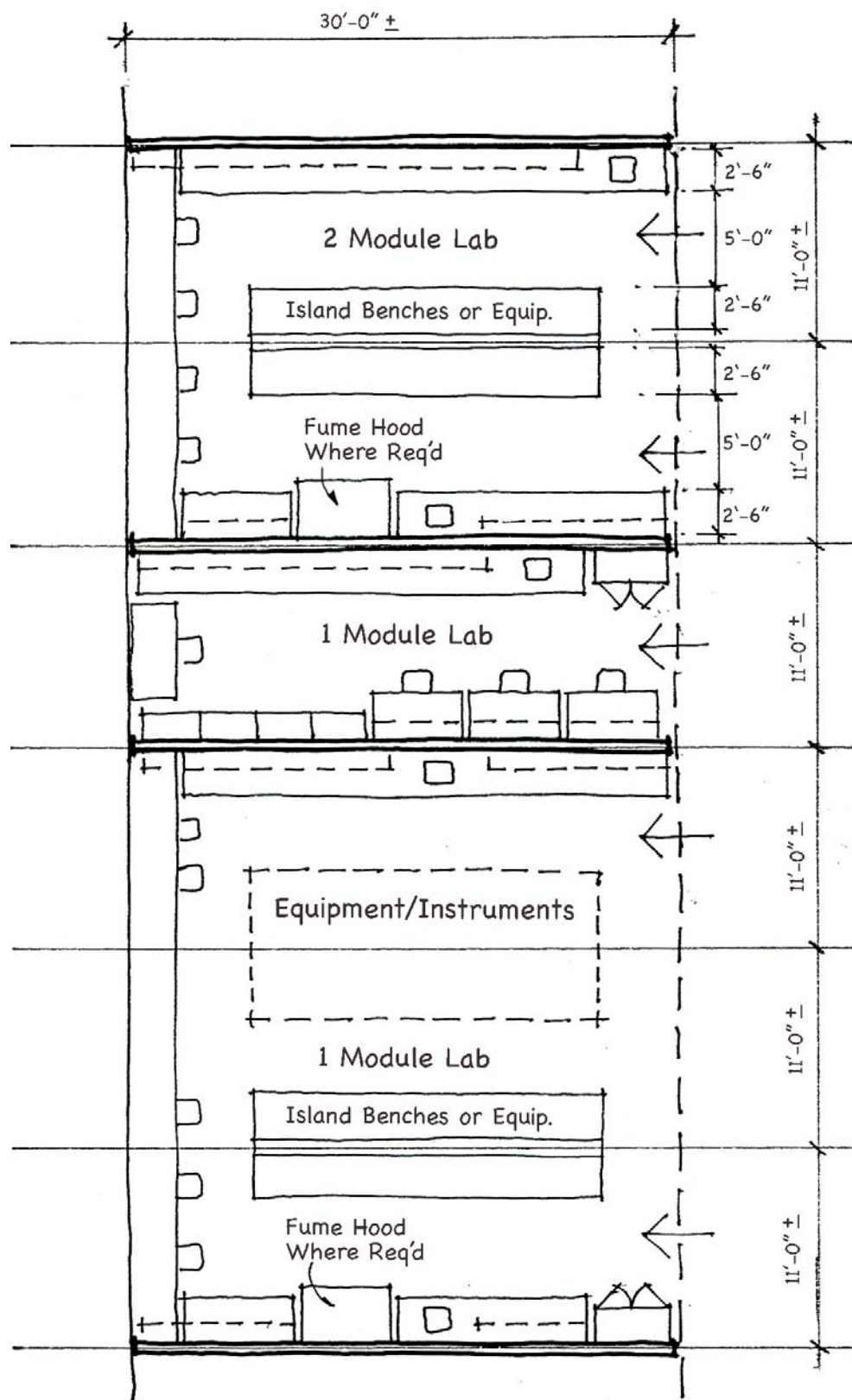
MODULAR LAB CONCEPT

A modular planning concept allows predictable placement of major structural elements of the building; it allows for constant locations for overhead piped utilities runs and constant and predictable locations for utility placement in the lab. The modular lab concept provides overall long range flexibility to support future lab functions.

The committee based its building layout concepts on an approximately 11-foot module. This is a recognized standard among laboratory designers. The 11-foot module derives from the space taken up by demising walls, lab benches or desks, and comfortable walking space for one person to pass between individuals working at benches on either side of the room. Designing the building to this module provides maximum flexibility for lab layouts. Labs may take up one or more modules, or portions of modules. Labs may also share modules. Labs and spaces, which occur in the center of the building, do not necessarily need to be approximately 30' deep. They can be less or more than 30'. The 11' spacing for laboratory utilities should always be constant. See the diagram on the following page.

The same module also works well for office and research support labs (160 sf \pm); when these rooms are laid out on this module, their resulting proportions (roughly 11' x 15') yield efficient, functional, and comfortable spaces. At the building perimeter, all lab and office modules will enjoy a generous amount of daylight along the exterior wall. Given the site identified in this program, this sunlight will come from either the north or south.

MODULAR LAB CONCEPT



MODULAR LAB CONCEPT

10.0 LABORATORY REQUIREMENTS

LABORATORY REQUIREMENTS

The laboratory spaces for the Frederick Albert Sutton Geology and Geophysics Building are different in many ways from traditional academic or scientific research laboratories. Many of these labs have specialized requirements that go beyond those of more typical labs. In addition, some requirements of traditional laboratories are not needed in many labs in the new facility.

Vibration Control

Existing Conditions

Researchers in the Department of Geology and Geophysics use sophisticated equipment that is sensitive to structure-borne vibrations. Individual space outlines identify the that are sensitive to structure-borne vibrations. The existing building was not designed with specific vibration criteria in mind; instrumentation often yields questionable results due to vibration in the current lab environment, particularly on upper floors of the building.

Goal

The structural portion of this document identifies specific vibration criteria for vibration-sensitive labs (2,000 μ -inches per second), standard laboratories (4,000 μ -inches per second), and for other areas of the building. Designers must ensure that the structure is adequately designed to meet the minimum building vibration criteria. The Department's intent is to provide any further vibration control needed within the equipment stand, table, or housing.

Recommendations

The design must—at a minimum—meet the vibration criteria established above. These vibration benchmarks are based on accepted laboratory design standards rather empirical measurements. In the very early stages of schematic design, the design team should engage the services of an acoustical engineer to measure airborne and structural-borne vibrations at the Department's most vibration-sensitive labs in their current locations at various times of operation under varying conditions. Such conditions would include the presence or absence of heavy foot traffic in the building or vehicular traffic on 100 North Street. The design team should work with the Department to analyze the data obtained and either validate the vibration criteria suggested above or derive a different, more appropriate standard.

Vibration-sensitive functions should be congregated together in vibration-sensitive zones of the building so these areas can be stiffened against excess vibration without requiring that the entire structure pay up charge for the elevated standard.

De-Ionized (DI) and Further Purified Water (18 Megohm/cm)

Existing Conditions

Based on statements from the user groups, there appears to be a small need for DI water, on the order of 5L/week in the building. The existing facility includes two or three labs where DI water is being used. Where there is a need to achieve higher water purity, the department also uses purification stills and point-of-use polishing units.

The existing Browning Building has a distribution system that makes de-ionized water available to every lab. Since it is only used in a few locations, DI water sits stagnant in the piping in many portions of the distribution loop. DI water can be corrosive and will tend to leach impurities from the piping system. Impurities due to this stagnation tend to reduce the overall purity (and hence usefulness) of the water circulated through the building.

LABORATORY REQUIREMENTS

Goal

The department's goal is to provide water of the purity needed in the locations where it is most needed.

Recommendation

We recommend a centralized DI water system with a small distribution loop so it can be available in the few labs that use it regularly in substantial quantities. This should be a continuously re-circulating system with short dead legs to the outlets to ensure that DI water does not stand in the pipe and remains as clean as possible. In addition to providing DI water in certain labs, this scenario will provide a single location in the building where DI water could be dispensed into 5L carboy containers that could then be taken back to the lab for use. A point-of-use polishing unit or water purification still should be located at the central dispensing station to provide a source for higher quality purified water.

As noted in the mechanical section of this program, we recommend that the system be designed to deliver type II / 1 megohm / cm reagent grade water to the outlets and central dispensing station. We recommend that a continuously re-circulating CPVC system be designed with no more than a 24-inch dead leg to any one outlet. The continuously re-circulating system with short dead legs to the outlets assures that DI water does not stand in the pipe and remains as clean as possible. As a means to provide higher purity water (i.e. 18 megohm/cm.) we recommend that each station be designed to accommodate a wall-mounted point-of-use polishing unit or water purification still.

Fume Hoods

Existing Condition

The existing Browning Building has a large number of fume hoods (in many cases two or three per lab). All of the hoods in the building have been recently replaced with new models. Due to the nature of its research work, the Department does not use very many fume hoods. Accordingly, many hoods are underutilized or not used at all. And the use of fume hoods is expected to diminish further over the life of the Sutton building. The Department anticipates that it will continue to conduct some research that will require fume hoods, downdraft hoods, and/or dust removal hoods.

Goals

Provide fume hoods or specialized exhaust systems where needed, as appropriate to the research to be conducted in each laboratory. Provide hoods and controls that optimize energy usage and effectiveness of building HVAC system. Design exhaust system so that hoods can be added to any lab in the future.

Recommendations

Provide hoods and exhaust systems as required by individual space outlines and described in the mechanical section of this program.

Use high-efficiency hoods. Evaluate whether any of the unused or under-utilized fume hoods in new condition currently located in the existing Browning Building can be removed and re-installed in the Sutton building.

As described in the mechanical section of this program, provide centralized exhaust stacks at two plan locations in the building so that hoods can be added to any lab in the future by piping through open ceiling space in labs and corridors.

LABORATORY REQUIREMENTSLab Bench Surfaces*Existing Conditions*

Labs housed in the existing Browning and Mines Buildings are typically furnished with chemically-resistant laboratory bench tops. In many labs—particularly in teaching labs where large rock samples are often placed on the bench top—this surface has not held up well against impact and scratches from heavy rock samples. Labs designed for one use must often accommodate quite different uses for which the bench surfaces are not appropriate.

Goal

Design bench tops that will be durable and serviceable over the life of the lab benches. Design built-in and moveable benches that can adapt to a variety of uses.

Recommendations

Early in the design process, involve the CM/GC in mocking up a variety of countertop surfaces, including materials for temporary overlay, that the department can experiment with in existing labs. Develop a solution allowing ultimate flexibility based on the lessons learned from these mockups. Materials to be investigated should include, but not limited to, solid epoxy resin and phenolic resin material, chemically-resistant plastic laminate, plate steel and stainless steel, and dense resilient material such as rubber or linoleum. To provide for maximum flexibility, experiment with overlay materials (such as steel plates that can be laid down or linoleum that can be rolled out). Such an approach will allow many different lab bench surface materials to be tested over time and a suitable surface to be selected. Lab bench surfaces should be adaptable to alternate materials in labs where heavy rock, high impact or where abrasive work will be accomplished. This would allow all labs to be converted for wet chemical use and to be adapted with overlays for use with heavy rock samples.

Lab Utilities*Existing Conditions*

The following utilities are available at the benchtop and the fume hoods in most of the Department's existing labs in the Browning Building:

- Natural Gas
- Vacuum
- Compressed Air

Researchers bring other gases to the lab in canisters as needed. In addition to the utilities noted above, researchers in several laboratories expressed a need for:

- Lab Chilled Water.

Goal

Provide gas, air, vacuum utility drops and chilled water or process cooling water in at least one location in each lab with equipment requiring these utilities. Loop these utilities in all lab areas so future connections can be made as necessary.

LABORATORY REQUIREMENTS

Recommendations

Locate compressed air, vacuum, and natural gas outlets adjacent to sink in each lab requiring these utilities. Locate at each fume hood as well. These utilities, including power should also be available at valved outlets dropped from ceiling-mounted trees. In addition, loop lab chilled water in ceiling space near each lab on every floor of the building. Pipe lab chilled water to the labs programmed for water-cooled refrigeration equipment. See mechanical for additional information.

11.0 CODE ANALYSIS

CODE ANALYSIS

PRELIMINARY CODE INFORMATION

(2003 International Building Code)

Note: A full code analysis as required by DFCM Design standards will be required during the course of design.

SUTTON BUILDING**Proposed Areas of Sutton Bldg. including Connector Link**

1 st Floor	24,000 SF
2 nd Floor	24,000 SF
3 rd Floor	21,741 SF
4 th Floor	<u>21,300 SF</u>
TOTAL	91,041 SF

Occupancy Type

B

Building Type

Type II – B Fully Sprinkled

Allowable Area

Basic Allowable = 23,000 x 2 for fully sprinkled

If = 60.6 (perimeter open)

Aa = 82,938 SF/Floor

x3 (Multi-story bldg.) = 248,814 SF ALLOWABLE

Each story = 62,204 SF Allowable

TOTAL AREA PROGRAMMED = 91,041 SF

BUILDING IS ALLOWABLE AS TYPE II-B FULLY SPRINKLED

No rated corridors required. No separation walls required. A 2HR fire wall will be required between Sutton Bldg. and the existing Browning Bldg. which is 8 stories.

Programmed Occupant Load of Sutton Bldg.

1 st Floor	240
2 nd Floor	240
3 rd Floor	217
4 th Floor	<u>213</u>
TOTAL	910

<u>EXITING</u>	<u>Max. Occupant Load</u>	<u>Exit Width Required</u> (sprinkled bldg.)	<u>Exit Width Programmed</u>
1 st Floor	240	36"	144"
2 nd Floor	240	36"	168"
3 rd Floor	217	32.55"	90"
4 th Floor	213	31.95"	90"

Stair width required: 48"

Stair width programmed: 90"

No point in the building will be more than 130' from an exit.

Exits will be located at the 1st & 2nd floors. Providing all required egress on each of those two floors would eliminate the requirement that exit convergence be considered for calculating exit widths.

PLUMBING FIXTURES REQUIRED (2003 International Building Code)Total Fixtures Required

<u>Men</u>	<u>Women</u>
7 WC	10 WC
3 urinals	6 lavs
6 lavs	

5 Drinking Fountains

CODE ANALYSIS

IVOR THOMAS HIGH BAY LAB

Proposed Area:

Ivor Thomas High Bay Lab	3,940 SF
Existing Building 59	<u>9,784 SF</u>
Total	13,724 SF

Occupancy Type

B or F-2 (both buildings) B is most restrictive

Building Type

Type V – B

Allowable Area (both buildings together)

Basic Allowable = 9,000 (occupancy B)

If = 75.0 (perimeter completely open)

Aa = 9,000 + 6,750 = 15,750 SF ALLOWABLE

TOTAL AREA (BOTH BUILDINGS TOGETHER) = 13,724 SF

TOTAL BUILDING IS ALLOWABLE AS TYPE V-B

Occupant Load of Both Buildings

Ivor Thomas High Bay Lab	40
Existing Bldg. 59	<u>98</u>
TOTAL	138

Exit Width Required
3.0'

Exit Width Programmed
12'

PLUMBING FIXTURES REQUIRED (2003 International Building Code)

Total Fixtures Required

<u>Men</u>	<u>Women</u>	
1 WC	1 WC	
1 lav	1 lav	Existing Toilet Rooms are adequate

12.0 FURNISHINGS, FIXTURES, & EQUIPMENT

FURNISHINGS, FIXTURES & EQUIPMENT

FURNISHINGS & EQUIPMENT

The intent for furnishings in the new Sutton Geology & Geophysics Building is to provide new and coordinated furnishings as far as the budget will allow. Consistency of furnishings and fixtures will provide unity for the Department and provide a plan for upgrading other Departments in the future as budgets become available.

The equipment and instruments used by the teaching laboratories and research laboratories will be reused from the existing buildings.

Should the budget become too tight, the Department and the College are prepared to reuse their existing furniture if necessary.

The furnishings and equipment budgeted herein are based on these concepts. All spaces are assumed to have new furniture.

FURNISHINGS, FIXTURES & EQUIPMENT

FURNITURE AND EQUIPMENT BUDGET ESTIMATE 3/05

College of Mines & Earth Sciences

• Dean's Office

Desk and Credenza	(1) @	\$2,000 =	\$2,000
Files	(2) @	525 =	1,050
Desk Chair	(1) @	300 =	300
Guest Chairs	(6) @	200 =	1,200
Guest Table	(1) @	500 =	500
Lamp	(1) @	150 =	150
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$5,225

• Associate Dean & Development Director

Desk and Credenza	(2) @	\$1,500 =	\$3,000
Files	(4) @	525 =	2,100
Desk Chairs	(2) @	300 =	600
Guest Chairs	(4) @	200 =	800
Guest Table	(2) @	400 =	800
Trash Receptacles	(2) @	25 =	<u>50</u>
			\$7,350

• Executive Assistant, Executive Secretary, Accountant

Work Stations	(3) @	\$3,500 =	\$10,500
Files	(6) @	525 =	3,150
Desk Chair	(3) @	300 =	900
Guest Chairs	(6) @	200 =	1,200
Trash Receptacles	(3) @	25 =	<u>75</u>
			\$15,825

• Clerical Area

Work Station	(1) @	\$2,500 =	\$2,500
Files	(1) @	525 =	525
Task Chair	(1) @	250 =	250
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$3,300

• Reception

Guest Lounge Chairs	(8) @	\$500 =	\$4,000
End Tables	(4) @	300 =	1,200
Coffee Table	(1) @	500 =	500
Literature Rack	(1) @	800 =	250
Table Lamps	(2) @	150 =	300
Trash Receptacles	(2) @	25 =	<u>50</u>
			\$6,300

• Filing Area & Break Area

Files	(17) @	\$525 =	\$8,925
Table	(1) @	300 =	300
Stacking Chairs	(4) @	100 =	400
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$9,650

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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FURNISHINGS, FIXTURES & EQUIPMENT

- Conference Room
 - Table (1) @ \$2,000 = \$2,000
 - Conf. Chairs (12) @ 500 = 6,000
 - Side Chairs (4) @ 200 = 800
 - Clg. Mtd. Video Proj. (1) @ 2,500 = 2,500
 - Trash Receptacle (1) @ 25 = 25
 - \$11,325

- Computer Systems Office, Work Area & Computer Room
 - Work Stations (6) @ \$2,500 = \$15,000
 - Files (3) @ 525 = 1,575
 - Work Tables (8) @ 300 = 2,400
 - Task Chairs (9) @ 200 = 1,800
 - Work Stools (6) @ 250 = 1,500
 - Cabinets (3) @ 500 = 1,500
 - Trash Receptacle (7) @ 25 = 175
 - \$23,950

Department of Geology & Geophysics

- Chair Office
 - Desk and Credenza (1) @ \$1,500 = \$1,500
 - Files (2) @ 525 = 1,050
 - Desk Chair (1) @ 300 = 300
 - Guest Chair (4) @ 200 = 800
 - Guest Table (1) @ 400 = 400
 - Lamp (1) @ 150 = 150
 - Trash Receptacle (1) @ 25 = 25
 - \$4,225

- Administrative Assistant, Accountant
 - Work Stations (2) @ \$3,500 = \$7,000
 - Files (4) @ 525 = 2,100
 - Desk Chairs (2) @ 300 = 600
 - Guest Chairs (4) @ 200 = 800
 - Trash Receptacles (2) @ 25 = 50
 - \$10,550

- Administrative Officer, Academic Counselor
 - Desk and Credenza (2) @ \$1,500 = \$3,000
 - Files (4) @ 525 = 2,100
 - Desk Chairs (2) @ 300 = 600
 - Guest Chairs (4) @ 200 = 800
 - Lamps (2) @ 150 = 300
 - Trash Receptacles (2) @ 25 = 50
 - \$6,850

- Future Accounting/Recruiters
 - Work Station (1) @ \$2,500 = \$2,500
 - Files (1) @ 525 = 525
 - Task Chair (1) @ 200 = 200
 - Guest Chairs (2) @ 200 = 400
 - Trash Receptacle (1) @ 25 = 25
 - \$3,650

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

FURNISHINGS, FIXTURES & EQUIPMENT

- Reception

Guest Lounge Chairs	(4) @	\$500 =	\$2,000
End Tables	(2) @	300 =	600
Coffee Table	(1) @	500 =	500
Literature Rack	(1) @	800 =	800
Table Lamps	(2) @	150 =	300
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$4,225

- Filing Area & Break Room

Files	(17) @	\$525 =	\$8,925
Table	(1) @	300 =	300
Stacking Chairs	(4) @	150 =	400
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$9,650

University of Utah Seismograph Stations

Auxiliary Faculty Offices and Technician/Engineer Offices are accounted for under Typical Offices

- Seismic Network Work Area

Work Stool	(2) @	\$250 =	\$500
Trash Receptacle	(2) @	25 =	<u>50</u>
			\$550

- Seismic Network Manager

Desk and Credenza	(1) @	\$1,500 =	\$1,500
Files	(2) @	525 =	1,050
Desk Chair	(1) @	300 =	300
Guest Chairs	(2) @	200 =	400
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$3,275

- Hardware/Software Engineer

Work Station	(1) @	\$3,500 =	\$3,500
Files	(2) @	525 =	1,050
Desk Chair	(1) @	300 =	300
Guest Chair	(1) @	200 =	200
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$5,075

- Earthquake Information Center & Response Room

Work Station	(3) @	\$2,500 =	\$7,500
Layout Tables	(3) @	300 =	900
Printer Table	(1) @	300 =	300
Trash Receptacle	(2) @	25 =	<u>50</u>
			\$8,750

- Earthquake Information Specialists & Technical Assistants

Work Stations	(4) @	2,500 =	10,000
Files	(3) @	525 =	1,575
Task Chairs	(4) @	250 =	1,000
Guest Chairs	(3) @	200 =	600
Trash Receptacle	(4) @	25 =	<u>100</u>
			\$13,275

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

FURNISHINGS, FIXTURES & EQUIPMENT

• Group Work Area				
Work Table	(1) @	\$600 =	\$600	
• Field Engineer/Technicians				
Desk	(2) @	\$1,000 =	\$2,000	
Files	(2) @	525 =	1,050	
Task Chairs	(2) @	250 =	500	
Trash Receptacles	(2) @	25 =	<u>50</u>	\$3,600
• Library/Conference Room				
Conference Table				
(expandable)	(1) @	\$1,000 =	\$1,000	
Conference Chairs	(8) @	200 =	1,600	
Trash Receptacle	(1) @	25 =	<u>25</u>	\$2,625
• Administration Office and Filing Area				
Desks	(2) @	\$1,000 =	\$2,000	
Files	(7) @	525 =	3,675	
Tables for Printer/				
Typewriter	(3) @	300 =	900	
Desk Chairs	(2) @	300 =	600	
Guest Chairs	(2) @	200 =	400	
Table Lamps	(2) @	150 =	300	
Trash Receptacle	(2) @	25 =	<u>50</u>	\$7,925
• Staff Office				
Desk	(2) @	\$1,000 =	\$2,000	
Files	(2) @	525 =	1,050	
Task Chairs	(2) @	200 =	400	
Guest Chairs	(2) @	200 =	400	
Trash Receptacle	(2) @	25 =	<u>50</u>	\$3,900

Typical Offices, Graduate Students, Technician/Engineers & Research Support Labs

• Faculty, Auxiliary Faculty, Emeritus, Post Docs				
Desk	(52) @	\$1,000 =	\$52,000	
Credenza	(28) @	500 =	14,000	
Files	(52) @	525 =	27,300	
Desk Chair	(52) @	300 =	15,600	
Guest Chairs	(108) @	200 =	21,600	
Guest Tables	(28) @	400 =	11,200	
Lamps	(52) @	150 =	7,800	
Trash Receptacles	(52) @	25 =	<u>1,300</u>	\$150,800
• Graduate Students				
Work Stations	(75) @	\$2,500 =	\$187,500	
Task Chairs	(75) @	200 =	15,000	
Trash Receptacles	(75) @	25 =	<u>1,875</u>	\$204,375

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

FURNISHINGS, FIXTURES & EQUIPMENT

- Research Support Labs

Table/desks	(66) @	\$500 =	\$33,000
Task Chairs/Stools	(44) @	250 =	11,000
Trash Receptacles	(22) @	25 =	<u>550</u>
			\$44,550

- Technicians/Engineers

Work Stations	(8) @	\$2,500 =	\$20,000
Task Chairs	(8) @	250 =	2,000
Trash Receptacles	(8) @	25 =	<u>200</u>
			\$22,200

Sample Prep Area

- Sample Prep, Trim Saws, Slabbing, Crushing, Heavy Liquids

Lab Stools	(4) @	250 =	\$1,000
Trash Receptacles	(8) @	25 =	<u>200</u>
			\$1,200

- Office & Student Work Space

Desk	(2) @	\$500 =	\$1,000
Files	(1) @	525 =	525
Task Chairs	(2) @	200 =	400
Guest Chair	(1) @	200 =	200
Chemical Storage Cabinet	(1) @	500 =	500
Trash Receptacles	(2) @	25 =	<u>50</u>
			\$2,675

- Frantzing Room

Desk	(1) @	\$500 =	\$500
Task Chair	(1) @	200 =	200
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$725

- Water Prep & Processing

Tables	(3) @	500 =	\$1,500
Task Chairs	(2) @	200 =	400
Lab Stools	(2) @	250 =	500
Commercial Refrigerators	(by Owner)		
Walk-in Commercial Freezer	(by Owner)		
Trash Receptacles	(2) @	25 =	<u>50</u>
			\$2,450

Collections/Curation

- Fossils, Rocks & Minerals, Paleo, Sed./Carbonate, Chemical Work Space, Rock Splitting/Sandblasting, Storage

Lab Stools	(9) @	\$250 =	\$2,250
Flammable			
Storage Cabinet	(2) @	500 =	1,000
Trash Receptacle	(9) @	25 =	<u>225</u>
			\$3,475

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

FURNISHINGS, FIXTURES & EQUIPMENT

- Staging Area/Class Set-up & Mineral Collection Work Area

Tables	(4) @	\$500 =	\$2,000
Task Chairs	(2) @	200 =	400
Trash Receptacles	(4) @	25 =	<u>100</u>
			\$2,500

- Office

Desk	(1) @	\$500 =	\$500
Files	(1) @	525 =	525
Task Chair	(1) @	200 =	200
Guest Chair	(1) @	200 =	200
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$1,450

- Map Storage Room

Tables	(2) @	\$700 =	\$1,400
Bookcases	(2) @	400 =	800
Task Chairs	(4) @	200 =	800
Trash Receptacle	(2) @	25 =	<u>50</u>
			\$3,050

Common Areas

- Student/Faculty Meeting Room

Tables	(6) @	\$300 =	\$1,800
Stackable Chairs	(30) @	100 =	3,000
Trash Receptacles	(2) @	25 =	<u>50</u>
			\$4,850

- Geology SAC Area

Tables	(2) @	\$300 =	\$600
Stackable Chairs	(8) @	100 =	800
Trash Receptacle	(1) @	25 =	<u>25</u>
			\$1,425

- Student Computer Lab

Tables	(15) @	\$500 =	\$7,500
Student Task Chairs	(30) @	200 =	6,000
Ceiling Mtd.			
Video Projector	(1) @	2,500 =	2,500
Trash Receptacles	(2) @	25 =	<u>50</u>
			\$16,050

- Conference, Seminar, Meeting Rooms

Tables	(8) @	\$400 =	\$3,200
Stackable Chairs	(30) @	100 =	3,000
Lounge Chairs	(12) @	500 =	6,000
Occasional Tables	(9) @	300 =	2,700
Lamps	(6) @	150 =	900
Trash Receptacles	(5) @	25 =	<u>125</u>
			\$15,925

SUTTON GEOLOGY & GEOPHYSICS PROGRAM

FURNISHINGS, FIXTURES & EQUIPMENT

Common Classrooms

- Flexible Classrooms

Adjustable			
Student Tables	(50) @	\$750 =	\$37,500
Student Chairs	(100) @	150 =	15,000
Ceiling Mtd.			
Video Projector	(3) @	2,500 =	7,500
Trash Receptacles	(3) @	25 =	<u>75</u>
			\$60,075

- Fixed Lecture Hall

Fixed Seating	In Construction Budget		
Ceiling Mtd.			
Video Projector	(1) @	\$2,500 =	\$2,500
Trash Receptacles	(2) @	25 =	<u>50</u>
			\$2,550

Teaching Labs

- Geotech Engineering & Hyrdrology, Mineralogy & Petrology, Optics, Paleontology & Sed. Geology, GIS/Visualization & Natural Disasters

Student Tables	(39) @	\$500 =	\$19,500
Student Microscope			
Tables	(6) @	1,000 =	6,000
Adjustable Student			
Chairs	(102) @	200 =	20,400
Map Table	(1) @	1,000 =	1,000
Lab Stools	(4) @	250 =	1,000
Ceiling Mtd.			
Video Projectors	(4) @	2,500 =	10,000
Trash Receptacles	(6) @	25 =	<u>150</u>
			\$58,050

Common Research Labs

- Chemistry Group

Table/Desks	(18) @	500 =	\$9,000
Task Chairs	(28) @	200 =	5,600
Lab Stools	(18) @	250 =	4,500
Trash Receptacles	(18) @	25 =	<u>450</u>
			\$19,550

- Scope & Beam Group

Microscope Tables	(6) @	\$1,000 =	\$6,000
Table/Desks	(14) @	500 =	7,000
Map Table	(1) @	1,000 =	1,000
Task Chairs	(20) @	200 =	4,000
Adjustable			
Lab Stools	(9) @	250 =	2,250
Ceiling Mtd.			
Video Projectors	(3) @	2,500 =	7,500
Trash Receptacles	(9) @	25 =	<u>225</u>
			\$27,975

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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FURNISHINGS, FIXTURES & EQUIPMENT

- **Materials & Mechanics Group**

Table/Desks	(40) @	\$500 =	\$20,000
Large Tables	(12) @	600 =	7,200
Task Chairs	(38) @	200 =	7,600
Lab Stools	(10) @	250 =	2,500
Ceiling Mtd.			
Video Projectors	(2) @	2,500 =	5,000
Bookcases	(6) @	400 =	2,400
Trash Receptacles	(12) @	25 =	<u>300</u>
			\$45,000

- **Computer Research Group**

Large Tables	(4) @	600 =	\$2,400
Table/Desks	(50) @	500 =	25,000
Large Island Table	(1) @	1,000 =	1,000
Task Chairs	(64) @	200 =	12,800
Files	(4) @	525 =	2,100
Ceiling Mtd.			
Video Projectors	(4) @	2,500 =	10,000
Trash Receptacles	(13) @	25 =	<u>325</u>
			\$53,625

SUTTON GEOLOGY & GEOPHYSICS PROGRAM
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FURNISHINGS, FIXTURES & EQUIPMENT

Summary

• College of Mines & Earth Sciences	\$82,925
• Department of Geology & Geophysics	39,150
• UUSS	49,575
• Typical Offices & Research Support Labs	421,925
• Sample Prep	7,050
• Collections/Curation	10,475
• Common Areas	38,250
• Common Classrooms	62,625
• Teaching Labs	58,050
• Common Research Labs	146,150
• Delivery and Installation	<u>50,000</u>
TOTAL	\$966,175

Equipment and Instruments used for teaching and research are not included.

Refrigerators are not included (\pm \$2,500 ea.)

Walk-In Freezer not included (\pm \$50,000 ea.)

Displays, Museum exhibits, etc. are not included (\pm \$150,000 as a rough estimate)

Furniture listed is based on excellent quality, well designed furniture such as Knoll.

Budget estimates are based on special U.S. Communities/Government pricing that companies such as Knoll can offer to the University of Utah.

FURNISHINGS, FIXTURES & EQUIPMENT

The following furniture has been used as a basis for developing this budget estimate:

Office Desks:	Knoll "Magnusson," wood
Work Desks:	Knoll "Series 2," steel & laminate
Tables/Desks:	Knoll "Interaction C-Leg" with drawers
Tables:	Knoll "Interaction C-Leg"
Meeting/Conference Tables:	Knoll "Magnusson," wood
Files:	Knoll "Calibre"
Desk Chairs:	Knoll "RPM," upholstered with arms, casters and advanced ergonomic controls
Task Chairs:	Knoll "SOHO," upholstered with arms, casters, and height adjustments
Guest Chairs:	Sit on It Seating "Achieve," upholstered with arms
Lab Stools:	Sit on It Seating "TR-2," upholstered ergonomic stool with casters
Stackable Chairs:	Sit on It Seating "On Call," plastic with steel frame
Work Stations:	Knoll "Dividends" and "Morrison"
Lab Tables and Benches:	Bench-Tek and Fisher Hamilton

FURNISHINGS, FIXTURES & EQUIPMENT

13.0 SCHEDULE AND PHASING

SCHEDULE AND PHASING

Construction and personnel moves for this project will be phased. The contractor and user will be required to perform these tasks in the following order:

1. Construct the new high-bay lab adjacent to building 59.
2. Relocate all occupants out of the current Ivor Thomas Ore Dressing Facility.
3. Raze the existing Ivor Thomas Ore Dressing Facility.
4. Construct the Sutton Building.
5. Move new occupants in.

The goal of this phasing approach will be that no labs or faculty members have to move more than once.

We anticipate that design work will begin in late April or early May 2005 and last through mid-2006. The owner plans to bring a construction manager/general contractor on board soon after the architect is hired. The design team should plan to prepare early work packages so that tasks 1, 2, and 3 on the above list can be completed by the time work packages are ready for the Sutton Building—or approximately June 2006. We anticipate a construction and commissioning period of approximately 16 months from that point. Allowing time for move-in, this schedule should provide for occupancy of the building at the beginning of January 2008.

For additional detail, see Appendix 18.2, *Suggested Schedule for Design and Construction*

14.0 STRUCTURAL

STRUCTURAL

General

The structures must satisfy the basic functional needs with reference to the following requirements:

- Exiting and circulation requirements
- Ceiling heights
- Above ceiling function requirements
- Local exterior aesthetic requirements

The structure should utilize materials that are readily available and can be procured in reasonable fashion for the specific location. Consideration should also be given to the availability of skilled labor in each particular material type. Seasonal characteristics can also affect material selection.

Close contact with the Owner and Owner's Representative will result in meeting the expectations and user desires for the structure with respect to both vertical and lateral loads. It is important to realize that code force levels represent the absolute minimum requirements for life safety and do not necessarily meet owner needs for overall building performance. Therefore higher force levels may need to be used as design constraints in order to meet the College's performance expectations for a specific structure.

Codes and Standards

The minimum codes and standards that apply to the design of new buildings include current editions of the following:

- DFCM Design Criteria (Current Edition)
- International Building Code (2003 Edition)
- American Institute of Steel Construction (AISC) with Commentary
- ACI 318 Building Code Requirements for Reinforced Concrete
- American Iron and Steel Institute (AISI) specifications for the Design of Cold Formed Steel Structural Members
- American Welding Society ANSI/AWS D1.1 Structural Welding codes
- Steel Joist Institute (SJI) for Joists and Girders
- Steel Deck Institute (SDI)

Site Specific Requirements

The structural systems in the facilities shall also be designed to meet specific site-driven requirements. These requirements vary from location to location. Some of these requirements include:

- Soil bearing pressure characteristics based on Geotechnical Report.
- Wind velocity (90 MPH, exposure C, minimum)
- Roof snow load (30 PSF, minimum), also implementing snowdrift.
- Soil profile characteristics for ground acceleration—used for design.
- Seismic Zone criteria, with soil profile as identified in the Geotechnical Report.
- Adjacent building connection requirements. Connecting floors.
- Special requirements for enhanced likelihood of survivability for Earthquake Information Center

Sutton Building

The new structure is to be located in the general area of the existing Ivor Thomas Ore Processing Building (North of the Browning Building). This building is to be demolished entirely. All existing foundations debris, piping, conduits, etc., are to be removed for maximum utilization of the site for foundation systems for the new structure. The Ore Processing Building is not structurally attached to the Browning Building in

STRUCTURAL

any way. Temporary shoring and/or foundation fortification for the Browning building foundation systems is not anticipated.

The new building is programmed to support a variety of uses and functions. Specific conditions and space allocation can be generalized and located in such a fashion as to minimize construction costs while achieving the same function throughout the varying priority of spaces.

Due to site constraints, the spaces are to be distributed over approximately 4 or 5 stories with a floor footprint of 20,000 to 25,000 square feet. Where possible, interior core spaces and layout should be similar on each floor. Similar core functions and overall building layouts are consistent with framing economy. Because of the variety of functions and uses, it is suggested that consideration be given to the possibility of significant future remodeling of the Sutton Building. Steel structures, with modular bay spacing, are conducive to such activities.

Longitudinal column bays are to be approximately spaced at 25 feet, 45 feet, 35 feet (moving north to south in plan) while the transverse spacing of bays should not exceed 22 feet. Floor-to-floor heights should generally be 15 feet.

The lowest level (on grade) is to be comprised of a concrete slab on grade in which it is recommended rock sample and specimen storage areas are located. Slabs at this level can be depressed as required for specific programmed functions, raised access flooring, and/or tall ceiling heights. All structured floors above grade are to remain horizontal with minimal slopes or no significant depressions.

Suspended floors should be framed with composite steel wide flange beams, corrugated metal deck and concrete, spanning to steel columns. The structural metal deck should support sufficient concrete to provide adequate floor stiffness (thickness of concrete to maintain fire rating is not required). Floor members should be limited to a 30" depth permitting sufficient room for mechanical systems and maintaining desired ceiling heights. Framing directions of beams and girders shall be coordinated with mechanical systems to utilize the interstitial space above the ceiling effectively. Mechanical ducts in general shall be below the structural framing members to permit flexibility for future remodeling.

The suspended floors are intended to support administrative offices, classrooms, teaching laboratories, research laboratories, and computer rooms. Special care must be taken to limit vertical beam deflections and minimize floor vibration for loads governed by the design building codes and specific owner requirements. Design and analysis for floor vibration shall follow guidelines and recommendations of Steel Design Guide Series #11 published by AISC (copyright 1997) and limited to the following floor vibration requirements:

Floor Vibration Requirements			
Standard Laboratories	Other (sensitive) Laboratories	Offices / Classrooms and corridors	Computer equipment rooms
4000 micro in/sec	2000 micro in/sec	16000 micro in/sec	8000 micro in/sec

In locations of computer rooms, it may necessary to depress the floor framing for access flooring. If possible, computer rooms should be located on the ground floor. If they must be constructed on a suspended floor, it will be critical to maintain the allocated interstitial space between floor framing and ceilings. Accordingly, it is recommended that framing be recessed no more and 12 inches. Lowered framing must be anchored adequately to adjacent floor framing in order to maintain floor diaphragm continuity and stability.

Link to the Browning Building

The structure linking the new Sutton Building to the existing Browning building is intended to house the Seismograph Stations' Earthquake Information Center. It is likely the floor-to-floor heights of the existing building and the new Sutton building will not align. It is suggested that ramping be utilized such that the entire structure is not penalized to achieve level floors at all levels of the connecting link. In addition, supporting structural elements (i.e. vertical and lateral load resisting systems) in the link should be enhanced to promote immediate occupancy following seismic events. It is not intended to classify or design the link as an *essential* facility, but rather provide more than typical redundant elements to maintain durability and structural integrity. It is further encouraged to design the linking structure for "maximum considered earthquake" force levels. Expansion joints between the link and the adjacent structures are expected to mitigate horizontal translation. Seismic base isolators may be incorporated as deemed economically feasible.

Ivor Thomas High Bay Building

The new Ivor Thomas building is to be constructed adjacent to building #59. The new building will be single story and intended for industrial space and use. Like the Sutton Building, the floor at ground level will be a concrete slab on grade of sufficient thickness and reinforcement to support heavy loads and unique loading conditions prescribed by the College's specific equipment. The roof framing must clear span between the perimeter bearing walls without intermediate support. Depth of the framing members is governed by economy, however the clear space between the finished floor and underside of roof framing is to be maintained at 18'-0."

Design Load Criteria**Ground Floors:**

The ground floors of the structures are to be a slab on grade construction. The slab is to be designed to support live loads as indicated in the load table below, in addition to all required dead or permanently attached loads. The floor should be sensitive to local soil characteristics, recognizing the need for special pad preparation. Design loads can be in excess of minimum recommended loads identified in current building codes without adversely impacting the budget. Reinforcing is to be determined by storage rack loading and local soils criteria. The floor shall have control joints as per design criteria and supplemented by the design engineer's judgment.

Suspended Floors:

Suspended floors are to be designed to support live loads as indicated in the load table below, in addition to all required dead or permanently attached loads. An additional load of 20 psf shall be allotted for removable partitions. No live load reductions will be permitted for horizontal framing members. Sufficient concrete depths shall be utilized so as not to require shoring of the deck during construction. The floor framing shall be coordinated with other disciplines to provide adequate clearance for mechanical, fire protection and electrical systems.

Roofs:

Roof framing members shall be a combination of open-web steel joists and joist girders. Steel wide flange beams shall also be used where fabrication costs of joist girders are excessive, particularly along braced frame grids. The roof is to be designed for live loads listed in the table below in addition to all required dead or permanently attached loads. In general, the structure will slope to drain locations. The roof framing shall provide adequate slope to sufficiently drain the water from the roof. Care

STRUCTURAL

should be taken to prevent ponding on the roof's surface. Consideration should be given to providing adequate insulation for both thermal and acoustical requirements.

Design Live Loads				
Level	Typical	Storage	Laboratories	Corridors
Floors	105 psf	250 psf	105 psf	125 psf
Roof	40 psf	N/A	N/A	N/A

Wall Systems:

Exterior wall systems will be of architectural elements for the Sutton Building and the Connecting link building. Exterior wall panels should be a combination of glazing and solid surfaces and should not be required to resist vertical or lateral structural loads. Wind loads should be resisted by bracing and solid elements of the wall system. Careful consideration should be given to design approaches that will mitigate damage to the wall systems during seismic events as a result of story drift.

Seismic Bracing Criteria

Lateral resisting elements are suggested to be located within the central cores or at the extreme perimeters of the structure to minimize space function and flow requirements. It is critical that a sufficient number of lateral elements be located to achieve redundancy prescribed in the IBC and above. Due to the educational nature of the structure, concealing of bracing members as well as the connections is not required. Rather expressing the braces may create teaching opportunities.

Braced Frames:

Lateral seismic loads are preferred to be resisted by steel braced frames. Steel braced frames are suggested to minimize both construction duration and cost. Steel braced frames provide a very efficient means of resisting lateral loads. Story drift is minimized due to the stiffness of the frames. The frames must be continuous to the foundation level. It is critical that the braced frames be located in such a fashion as to minimize excessive rotation during a seismic event. Additional story drift caused by rotation shall be considered in design. In general, braced frames should be located within the interior portions of the building. Core walls, or those walls that form the stairwells and interior service spaces for each floor, are normally located within the center portions of the floor plan. Locations of diagonal braced frames will need to be limited to areas that do not compromise functional layouts. Perimeter braced frames visible from the outside of the building are acceptable.

Moment Frames

Steel moment frames should only be required in specialized areas to express architectural features. If used, frames must be compatible with overall deflections of adjacent braced frames. Moment frames are inherently much more flexible and difficult to justify when held to the same deflection/drift requirements as braced frames or shear walls.

Shear Walls

Shear walls should only be used where economics justify. Combinations of lateral resisting elements should be avoided where possible in conjunction with shear walls. When combinations of systems are used, costs are adversely affected. Shear walls may, of course, be utilized where grade changes are present and basement walls are otherwise required.

15.0 MECHANICAL/PLUMBING

MECHANICAL/PLUMBING

General Mechanical

The mechanical systems shall be designed to provide safe, economical, energy efficient, low maintenance service. All mechanical systems and equipment shall have a proven track record of high quality, energy efficient environmental control.

The following codes, standard and guidelines shall be followed:

- International Building Code, 2003 Edition
- International Mechanical Code, 2003 Edition
- International Plumbing Code, 2003 Edition
- International Fire Code, 2003 Edition
- International Fuel Gas Code, 2003 Edition
- National Fire Protection Association (NFPA)
- University of Utah Design Guidelines and Instructions
- State of Utah Energy Code
- American Society of Heating Refrigeration and Air Conditioning Engineering (ASHRAE) standards
- Sheet Metal and Air Conditioning Contractors National Association Standards (SMCNA)
- State of Utah Boiler and Pressure Vessel Rules and Regulations
- American Society of Mechanical Engineers (ASME) standards
- Salt Lake Utah City Code, for site development regulations for Storm Drain and Sanitary Sewer
- National Electric Safety Code
- American Society of Testing and Materials (ASTM)
- Occupational Safety and Health Administration (OSHA)

Design Conditions**Indoor Occupied**

Cooling Dry Bulb:	72 deg. F
Heating Dry Bulb:	72 deg. F
Relative Humidity:	Not Controlled

Indoor Unoccupied

Cooling Dry Bulb:	80 deg. F
Heating Dry Bulb:	65 deg. F
Relative Humidity:	Not Controlled

Outdoor Design Temperatures

Summer Dry Bulb:	96 deg. F
Summer Wet Bulb:	62 deg. F
Summer Design Month:	Peak month(s)
Winter Dry Bulb:	6 deg. F

Building Lighting Loads:

General Building Lighting	1.5 w/sq ft
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Design Sound Levels

Offices	NC-30
Classrooms	NC-30
Laboratories	NC-35

MECHANICAL/PLUMBING

Recommended Glass Values *

Summer “U” Value	0.29 Btuh/ft ² /deg F (maximum)
Winter “U” Value	0.29 Btuh/ft ² /deg F (maximum)
Shading Coefficient	0.44 (maximum)

* The use of higher performing glazing is encouraged.

It is suggested that ratio for visible to shading coefficient of 2 to 1 be utilized.

Ventilation Air Quantities	Per code requirements
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Infiltration	Positively pressurize the building to maintain 0.05" water column static pressure at the building entry
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All design values shall be reviewed and adjusted at the time of the final design. Final values shall match actual building and site conditions.

Campus Mechanical Systems

High Temperature Heating Water :

Existing 6" Campus High Temperature Water Supply and Return Water piping systems are located east of the proposed location of the new building. New High Temperature Water Supply and Return piping to serve the new building are to be connected to this existing piping system. Insulated buried piping is to be routed to the building. The design shall incorporate required expansion loops in the branch piping systems. The path of the new piping system is to parallel or run underneath sidewalk and paved areas as much as possible.

Outside Utilities

Culinary Water:

An existing metered 8" water main is located east of the proposed location of the new building. Branch domestic water is to be connected to this existing main to serve the new building.

Fire Protection Water:

The fire main to serve the new building is to be connected to the existing 8" water main located east of the proposed location of the new building.

Sanitary Sewer:

An existing sewer main is located in First South Street. The sanitary sewer from the new building is to be connected to the existing sewer main located in First South Street. A new manhole is to be provided at the connection to the existing main. Salt Lake City's requirements for sanitary sewer connection to the city's system are to be followed.

Storm Drainage

An existing 27" storm drain is located in First South Street. The storm drainage from the new building is to be detained on site with metered outflow to a piping system that connects to the existing storm drain system located in First South Street. Salt Lake City's requirements for storm drain detention and discharge to the city system are to be followed.

Building Mechanical SystemsCentral Heating Water System:

Building heating water is to be generated from heat exchange with the Campus High Temperature water system. Two separate heat exchange systems are recommended. One for general heating use to serve; the main heating coils, reheat coils, cabinet heaters, unit heaters etc. The second system is to heat a 40% propylene glycol water mixture to serve the air handling unit preheat coils. The building heating water system is to be designed with two heat exchangers, each sized for two thirds the required building heating load.

Each heating system shall have two pumps, a primary pump and a standby pump. Provide an expansion tank for each system. Provide metered makeup to the system. Provide a glycol make up unit to serve the preheat exchanger. The heating system pumps are to be operated from variable frequency drives.

The High Temperature Water Heat Exchanger room is to have an exit / entry directly to/from the outside and is not to communicate directly with the interior space of the building.

Central Chilled Water System:

Building Chilled water is to be generated from a water-cooled chiller. The chiller is to be located in a separate mechanical room from any air handling or heat exchange equipment. The chilled water system shall consist of a primary – secondary pumping system. The system is to have primary constant flow pumping through the chiller with variable flow secondary (system) pumping to the building cooling loads. Two primary pumps are to be utilized, one serving as the primary and the other as standby. Two system pumps are to be utilized, one serving as the primary and the other as standby. The system pumps are to be furnished with variable frequency drives. Provide an expansion tank with metered makeup water for the system.

A remote ceramic cooling tower located outside is to be utilized for condenser water production to serve the chiller. Two tower water pumps are to be utilized, one serving as the primary and the other as standby. A tower water treatment system is to be provided with metered make up water.

To provide an element of back up for the new Sutton building and the existing Browning building, and to also take advantage of being able to fully load a single chiller under lighter load conditions, consideration should be given to the connecting of the chilled water systems of the new Sutton Building with the existing chilled water system serving the Browning Building.

Central Domestic Water Heating System:

Building domestic hot water is to be generated by heat exchange with building heating water. A single double wall shell and tube heat exchanger is to be used. An insulated domestic hot water storage tank with circulating pump is to be provided.

Laboratory Chilled Water System:

A Laboratory Chilled Water (Lab Chilled Water) system is to be provided to remove the reject heat of compression associated with self contained refrigeration lab equipment. The Lab Chilled water is to be generated from an air cooled chiller. The lab chilled water system shall consist of a primary – secondary pumping system. The system is to have primary constant flow pumping through the chiller with variable flow secondary (system) pumping to the equipment condenser loads. Two pumps are to be utilized, one serving as the primary and the other as standby. Two system pumps are to be utilized, one serving as the primary and the other as standby. The system pumps are to be furnished with variable frequency drives. An expansion tank with metered makeup water for the system is to be provided.

MECHANICAL/PLUMBING

General Building Air Handling:

The building is to be served by a variable air volume system. The system's central air handlers shall consist of; mixing section with outside air and return air dampers, filter section (pre and final filters), heat recovery coil, glycol preheat coil, chilled water cooling coil, heating water coil, and internally isolated supply air fan.

The use of direct indirect evaporative cooling should be considered. The direct indirect system will require a pre-cooling coil that utilizes cooled water from the cooling tower and a direct evaporative media section. Minimum outside air is to be monitored and controlled.

Relief air is either by relief air fans or by combination return – relief air fans.

Variable frequency drives shall be provided for each fan system.

Variable volume terminal boxes with hot water heating coils are to be utilized for each separate room or space. An overhead supply distribution system is to be utilized.

In areas with ceilings, the ceiling plenums are to be utilized for return air. In areas where there are no ceilings and the air is to be returned, the return air is to be transferred back to the ceiling spaces with the use of ductwork.

General Building Exhaust:

General Laboratories, Research Support Laboratories, Toilet Rooms, Janitor spaces etc. are required to be exhausted. A general exhaust system is to be provided. General exhaust from the laboratory spaces is to be variable air volume. General exhaust from Janitor Rooms, Toilet Rooms, and Break room type spaces is to be constant volume.

The general exhaust fan system is to be design with heat recovery. The system's central exhaust fans shall consist of; filter section, heat recovery coil, internally isolated exhaust fan and discharge ductwork to the outside. The general exhaust fans are to be located on the roof of the building. The general exhaust system is to be independent of the fume hood exhaust system.

The heat recovery is to be accomplished by circulating water – propylene glycol mixture between the heat recovery coils of the exhaust fan(s) and the heat recovery coil(s) of the central air handling unit. The system is to be designed with primary and standby pumps, expansion tank and glycol makeup unit.

Variable frequency drives shall be provided for each fan system.

Variable volume exhaust air inlet valves (Phoenix) shall be provided for exhaust air from each laboratory space. (See Laboratory Fume Hood Exhaust and Room Supply Air Systems discussion).

An overhead exhaust system is to be utilized.

Laboratory Fume Hood Exhaust and Room Supply Air Systems:

In total, a limited number of Laboratory fume hoods are required for this building. However, for flexibility in locating hoods, both now and in the future, it is suggested that one or two central exhaust risers, which extend vertically through all floors of the building be provided.

The fume hood exhaust systems are to be independent of the general exhaust air systems.

For the programmed fume hoods, fume hood exhaust systems are to be provided. The exhaust air from the hoods and the associated make up air to and the general exhaust air from the laboratory

space(s) are to be variable volume. A lab hood exhaust system using air valves and controls similar to that offered by Phoenix is to be used.

Fully welded stainless steel exhaust ductwork for the fume hood exhaust systems is required.

Dust Collection Exhaust Air Systems:

In specific locations in the Sample Preparation and in the Collection/Curation area, where crushing or grinding is to occur, and dust control is required, it is suggested that these spaces be provided with a dust exhaust system.

The system is to be designed with ductwork and exhaust fan(s) that are suitable for material handling duty and applications. All dust exhaust inlets are to be designed with blast gates to allow for the isolation and adjustment of the inlet air volumes.

In the areas requiring the dust exhaust, from the ductwork mains, a flexible branch ductwork system with a snorkel type inlet should be provided. The flexible ductwork system should provide for a 360° range of rotation.

These spaces should also be provided with one-pass-through air.

Earthquake Information Center:

The mechanical systems serving the spaces associated with the Earthquake Information Center spaces are to be designed so as to enhance the prospects for immediate occupancy following a seismic event.

Under normal operation the spaces are to be served from the building's variable air volume air handling system. In the event of a power outage which would take the main air handling systems off line, a separate back up HVAC fan system is to be provided. The system is to be powered from the emergency generator system. It is suggested that a self contained DX refrigeration fan coil unit with remote condenser be utilized to provide the backup.

Toilet Rooms and Custodial Closets:

These space are to be 100% exhausted at 2 ½ to 3 cfm per square foot. Transfer air is to be utilized to ventilate these spaces. Where heat is required, supply air from the VAV system with hot water reheat should be considered.

Elevator Equipment Rooms:

The elevator equipment rooms are to be conditioned with a separate split direct expansion (refrigeration) cooling unit.

Elevator Shaft Venting:

Each elevator shaft shall be ventilated with a code complaint louvered dampered opening that communicates to the outside.

Electrical Closets:

Electrical Closets housing transformers shall be ventilated by means of transfer air utilizing fans which supply air from the adjoining ceiling plenum to the Electrical Closet space.

Computer Switch and Server Rooms:

The mechanical systems serving the Computer Switch and Server spaces are to be designed so as to enhance the prospects for immediate occupancy following a seismic event.

MECHANICAL/PLUMBING

These spaces are to be conditioned with Computer Room Air Conditioning Units (CRAC Units) with remotely located condensers. The number and size of CRAC units is to be as required to meet the projected load plus one additional unit for redundancy ($n + 1$). The CRAC units are to discharge air down into the raised floor plenum space. Perforated panels of required quantity, located in the cold aisle, are to be provided. A minimum raised floor height of 24"- 30" is to be provided (raised floor height is to be optimized to provide the required plenum space for the adequate distribution of air and to accommodate the required cabling systems).

Remote condensers (primary and standby) are to circulate and cool a water – propylene glycol mixture for condenser water use at each of the CRAC units. The CRAC units are to be provided with an economizer coil.

Circulating pumps (Primary and Standby) are required.

A VAV terminal box, cooling only with distribution ductwork shall be used to introduce conditioned outside air into the computer room space.

The computer room space shall be humidified independently from the building. Humidification will be introduced through steam generating humidifier system provided with each of the CRAC units.

Under floor water detection should be provided.

Mass Spectrometer:

The mechanical systems serving the spaces which house the mass spectrometer(s) and other areas with similar designations are to hold the temperature in the space to ± 1 deg. C. (1.8 deg. F)

Ventilation for radioactive storage:

A separate exhaust system is to be provided for the exhausting of the Radioactive Storage area. The storage area is to be 100 % exhausted with no recirculation, and is to be negative to the surrounding spaces. The air from the space is to be filtered with HFFPA type filters suitable for the type of material be stored. Consult the Universities Environmental Health and Safety office for requirements.

Mechanical Controls

Per the campus standard, the building mechanical controls shall be direct digital and shall be based upon either Johnson Controls or Staefa Controls.

Controls for the High Temperature Water system shall be a combination of pneumatic and electric controls complying with current campus standards.

BTU metering complying with current campus standards shall be provided for measuring building high temperature water usage.

Plumbing Systems

Fixtures:

All fixtures shall be new and shall be of a quality to meet current standards as well as be of manufacturer and type required by the University. All wall mounted fixtures shall have carriers. ADA fixtures shall be provided to meet current requirements. All sinks located in identified eating areas shall be provided with electric disposal units.

Sanitary Sewer:

Except for spaces where chemicals are used or stored such as in the Chemical Work Space/Sample Pre area, the sanitary sewer and vent system shall be cast iron.

The sewer shall be sloped and routed to meet current code requirements and to gravity slope to the city sanitary sewer system.

Floor drain systems located in any of the Sample preparation Area are to be connected to a sand interceptor prior to connecting to the main sanitary sewer system. Additionally all drains from sinks located in the Sample Preparation and Collection/Curation Areas are to be connected to sediment traps prior to the connection to the main sanitary sewer system.

In locations where gravity drainage is not possible, such as a basement fan room, provide duplex sump pump.

Floor Drain systems are to be provided in the Teaching Laboratories, Chemical Research Laboratories and Material-Mechanics Laboratories.

Domestic Water Systems:

Domestic water piping shall be type K or L copper with service provided to each fixture. The domestic hot water system shall be recirculated.

Roof Drainage System:

A complete main and overflow roof drain system shall be designed. Cast iron piping is recommended for service of 25 foot head and lower. For service greater than 25 foot head, ductile iron with grooved joints is recommended. The main drains are to be extended and connected to a detention system located on the site. Detention can be accomplished either by creating a basin by grading of the site or by using buried vault(s). The outflow from the detention is to be metered to the city storm drain system through an orficed outlet. The secondary roof drains are to terminate outside of the building at splash blocks.

Compressed Air:

A central compressed air system to serve laboratory spaces located throughout the building is required. Medical quality air compressor and system are required. The air compressor system is to be provided with filter dryer and pressure reducing valve station. Compressed air system shall be designed to deliver required air quantity at 110 psi. Provide in each space requiring compressed air an adjustable pressure regulating valve with shut off valve in the branch piping.

Natural Gas:

Natural gas supply for use at the laboratory spaces and at the fume hoods located throughout the building are required. A new gas meter set and piping from the utility to the new building are required. To minimize the size required for the natural gas piping, the natural gas piping system is to consist of 2 psi mains on each floor with 4 oz. reduced pressure branch piping into each laboratory.

D.I. Water:

De -Ionized (DI) water is required in 4 or 5 laboratory spaces and at a central location that will be located near the Chemical Storage Area.

The De-ionized water is to be generated at the building. The generating system is to consist of a reverse osmosis generator, de-ionizer, re-pressurization pump(s), and storage tank. The distribution piping system should use CPVC piping and is to be looped and continuously re-circulated. The system is to be designed so that there is no more than a 24 inch dead leg to any one outlet. At each station the DI system is to be designed to accommodate a wall mounted point of use polishing unit.

MECHANICAL/PLUMBING

Lab Vacuum:

A central vacuum system to serve the laboratory spaces located throughout the building is required. The vacuum unit is to be located in a central mechanical space. Vacuum piping system is to be extended to all floors of the building with branch piping extending to all Teaching Laboratory and Common Research Laboratory spaces. The vacuum pump shall be oil free, laboratory quality, suitable for 28 inches Hg vacuum application.

Emergency Eye Wash:

Combination emergency eye wash and showers are to be provided in locations defined in the Architectural program requirements. Each eyewash is to be provided with a tempered water supply and floor drain.

Fire ProtectionGeneral building Fire Protection System:

The entire building shall be sprinkled with wet type fire sprinkler system with required hose connection in all exit stairs. The fire sprinkler systems shall be designed to comply with NFPA, State Fire Marshall, and Campus Fire Marshall requirements.

Computer – Server room:

The computer server room shall be protected with a gaseous (Inergen or FM 200) fire suppression system as the first stage of suppression with a pre- action fire sprinkler system, with full detection, provided as the second stage. Relief air openings of sufficient area from the protected areas are to be incorporated into the building design.

MECHANICAL/PLUMBING

Space Service Requirements

Teaching and Research Laboratories (Mechanical Design Criteria M1)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Negative
Recycle Air:	No
Supply Air:	Variable Air Volume. Supplied from the central air handling system.
Exhaust Air:	100% VAV exhaust. Served from the central general exhaust air system.
Hood Exhaust:	To be served from the building fume hood exhaust air system. For spaces programmed with a fume hood, connect hood to the VAV fume hood exhaust system.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Valved branch piping to outlets.
Natural Gas:	Valved branch piping to outlets.
Vacuum:	Valved branch piping to inlets.
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Valved and capped branch piping to the space.
D.I Water:	Provide only in laboratories programmed to receive D.I. outlet.

Research Support Laboratories
(Mechanical Design Criteria M2)**HVAC**

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Negative
Recycle Air:	No
Supply Air:	Variable Air Volume. Supplied from the central air handling system.
Exhaust Air:	100% VAV exhaust. Served from the central general exhaust air system.
Hood Exhaust:	Not required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required.
Natural Gas:	Not Required.
Vacuum:	Not Required.
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Not Required.
D.I. Water:	Not Required.

MECHANICAL/PLUMBING

Classrooms

(Mechanical Design Criteria M3)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: Heating Dry Bulb: Relative Humidity:	72 deg. F 72 deg. F Not Controlled
Space Pressure:	Positive.	
Recycle Air:	Yes.	
Supply Air:	Variable Air Volume, supplied from central air handling system.	
Exhaust Air:	Not Required.	
Hood Exhaust:	Not Required.	
Dust Collection Exhaust Air:	Not Required	

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required.

Offices, Copy, File, Office Storage
(Mechanical Design Criteria M4)**HVAC**

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

MECHANICAL/PLUMBING

Conference Rooms

(Mechanical Design Criteria M5)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: Heating Dry Bulb: Relative Humidity:	72 deg. F 72 deg. F Not Controlled
Space Pressure:	Positive.	
Recycle Air:	Yes.	
Supply Air:	Variable Air Volume, supplied from central air handling system.	
Exhaust Air:	Not Required.	
Hood Exhaust:	Not Required.	
Dust Collection Exhaust Air:	Not Required	

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

Lecture Halls

(Mechanical Design Criteria M6)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required

MECHANICAL/PLUMBING

Lobby / Display Area

(Mechanical Design Criteria M7)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

Break Area with Kitchenette
(Mechanical Design Criteria M8)**HVAC**

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Constant volume exhaust served from the General Exhaust system. Exhaust from room at 1 cfm/square foot exhaust rate.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

MECHANICAL/PLUMBING

Computer Systems Work Area (Mechanical Design Criteria M9)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

Computer Room

(Mechanical Design Criteria M10)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 68 deg. F Heating Dry Bulb: 68 deg. F Relative Humidity: 40-45 % RH
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Computer Room Cooling Units. N+1 quantity. Air for minimum outside air ventilation and space pressurization from Variable Air Volume central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Service to CRAC unit humidifiers.
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

MECHANICAL/PLUMBING

Computer Server

(Mechanical Design Criteria M11)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

Seismograph Station

(Mechanical Design Criteria M12)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Primary supply air from the central air VAV air handling system. Backup to spaces requiring continued operation in the event of a power outage to be provide from self contained direct expansion fan coil unit with remote condenser.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

MECHANICAL/PLUMBING

Sample Preparation Collection and Curation Spaces J1, J2, J3, J5, J6, J8, J9 & K-9 (Mechanical Design Criteria M13)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Negative
Recycle Air:	No
Supply Air:	Variable Air Volume. Supplied from the central air handling system.
Exhaust Air:	100% VAV exhaust. Served from the central general exhaust air system.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Snorkel inlets connected to the dust collection exhaust air system.

PLUMBING

Compressed Air:	Valved branch piping to required outlets.
Natural Gas:	Valved branch piping to required outlets.
Vacuum:	Valved branch piping to required inlets.
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Not Required
D.I Water:	Not Required.

Radioactive Storage

(Mechanical Design Criteria M14)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Negative
Recycle Air:	No
Supply Air:	Variable Air Volume. Supplied from the central air handling system.
Exhaust Air:	100% VAV exhaust. Served from a dedicated exhaust air system. Exhaust air filtered with HEPA filters.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required.
Natural Gas:	Not Required.
Vacuum:	Not Required.
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Not Required.
D.I Water:	Not Required.

MECHANICAL/PLUMBING

General Equipment Storage (Mechanical Design Criteria M15)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

Computer Room Extension Room
(Mechanical Design Criteria M16)**HVAC**

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive.
Recycle Air:	Yes.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Not Required
Domestic Hot Water:	Not Required
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

MECHANICAL/PLUMBING

Fabrication Workshop (Mechanical Design Criteria M17)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Negative
Recycle Air:	No.
Supply Air:	Variable Air Volume, supplied from central air handling system.
Exhaust Air:	100% VAV exhaust. Served from the central general exhaust air system.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Not Required
Natural Gas:	Not Required
Vacuum:	Not Required
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Not Required
D.I. Water:	Not Required

Class 10,000 (M5) Clean Room
(Mechanical Design Criteria M18)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: 30% min, 50 % max Particle count (0.5 micron and larger per cubic ft of air – max): 10,000
Space Pressure:	Positive, 0.05 inches of water column between clean room and the outside atmosphere. Airlocks at all entrances and exits, both for personnel and equipment.
Recycle Air:	Yes
Supply Air:	Supplied from a separate dedicated air handling unit. Stage 1 filter; rough filter 50-60% (NBS), Stage 2 filtering 80-85% (NBS), Stage 3 filtering: HEPA Filter MIL-F-51068. Air velocity 100 ft per minute at filter face and shall not vary more than 20 fpm throughout entire space.
Exhaust Air:	Not Required.
Hood Exhaust:	Yes
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Valved branch piping to outlets.
Natural Gas:	Valved branch piping to outlets.
Vacuum:	Valved branch piping to inlets. Vacuum provided at each air lock and to each pass through window.
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Valved and capped branch piping to the space.
D.I Water:	Valved piping to D.I. outlet.

MECHANICAL/PLUMBING

Better than Class 10,000 (M5.5) Clean Room
(Mechanical Design Criteria M19)

HVAC

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: 30% min, 50 % max Particle count (0.5 micron and larger per cubic ft of air – max): 2,830
Space Pressure:	Positive, 0.05 inches of water column between clean room and the outside atmosphere. Airlocks at all entrances and exits, both for personnel and equipment.
Recycle Air:	Yes
Supply Air:	Supplied from a separate dedicated air handling unit. Stage 1 filter; rough filter 50-60% (NBS), Stage 2 filtering 80-85% (NBS), Stage 3 filtering: HEPA Filter MIL-F-51068. Air velocity 50 ft per minute over entire facility.
Exhaust Air:	Not Required.
Hood Exhaust:	Yes
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Valved branch piping to outlets.
Natural Gas:	Valved branch piping to outlets.
Vacuum:	Valved branch piping to inlets. Vacuum provided at each air lock and to each pass through window.
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Valved and capped branch piping to the space.
D.I Water:	Valved piping to D.I. outlet.

Research Labs- Computer Research Group
(Mechanical Design Criteria M20)**HVAC**

Occupied Space Temperature:	Cooling Dry Bulb: 72 deg. F Heating Dry Bulb: 72 deg. F Relative Humidity: Not Controlled
Space Pressure:	Positive
Recycle Air:	Yes
Supply Air:	Variable Air Volume. Supplied from the central air handling system.
Exhaust Air:	Not Required.
Hood Exhaust:	Not Required.
Dust Collection Exhaust Air:	Not Required.

PLUMBING

Compressed Air:	Valved Branch piping to required outlets.
Natural Gas:	Not Required.
Vacuum:	Not Required
Domestic Cold Water:	Valved branch piping to fixtures requiring such.
Domestic Hot Water:	Valved branch piping to fixtures requiring such.
Lab Chilled Water:	Not Required.
D.I Water:	Not Required.

MECHANICAL/PLUMBING

Existing Ivor Thomas Building Demolition

To make way for the new building, the existing Ore Processing Building is to be demolished. Existing mechanical and plumbing systems serving the building are to be removed as part of the demolition work. Any mechanical or plumbing systems to be salvage are to be salvaged by the owner prior to demolition.

Existing utilities serving the building are to be removed and capped near the main utility piping connections. Existing utilities include:

Natural gas, served from main in First South Street. Cap piping at edge of sidewalk.

Domestic water and Fire protection, served from 8" main in First South Street. Cap piping systems at edge of sidewalk.

Sanitary Sewer; the existing sanitary sewer discharges to a main located in First South Street. Cap the existing piping at the edge of the sidewalk.

Storm Drainage; the existing storm drain discharges to a sump west of the existing building near the existing 22" water main. Cap the existing storm drain piping outside of the sump.

To allow for the construction of the new building, the existing cooling tower currently serving the Browning Building Chiller is required to be relocated. The Cooling Tower serving the Browning Building is to be relocated to the same location for the new cooling tower that is to serve the Sutton Building.

The existing cooling systems serving the Browning Building are to remain in service during the construction of the new building. A temporary cooling tower and condenser water piping system are to be incorporated into the design to allow for the operation of the existing water cooled chiller. The temporary system is to be in place and operational prior to the removal of the existing tower. The design is to incorporate requirements for the storage and protection of the tower during construction as well as the reassembling and reinstalling of the existing tower in the new location.

New Ivor Thomas High Bay Lab Building

The new Ivor Thomas High Bay Lab Building is to be located in a different location than the proposed Sutton Building. The proposed location, locates the new building north and adjacent to existing Building 59.

There are existing steam and condensate, and sanitary sewer utilities located in existing Building 59.

Mechanical

The new Ivor Thomas High Bay Lab Building is to be provided with a roof top cooling and ventilating unit. The rooftop unit is to have first stage direct indirect evaporative cooling with second stage being from direct expansion refrigeration. Supply air from the unit is to be ducted and distributed to the space through exposed to view ductwork.

Heating of the space is to be with steam unit heaters. Steam and condensate piping is to be extended from the existing systems located in the adjoining building.

The Lab is to be provided with a general exhaust system.

A constant volume fume hood exhaust system is to be provided for the new building, independent from the general exhaust system. The fume hood exhaust system is to serve a single fume hood in the space. The system is to be designed with a roof mounted hood exhaust fan and stainless steel ductwork.

Plumbing**Domestic Water:**

A minimum 2" cold water main is required to serve the building. The water entry is to be provided with a backflow preventer and pressure reducing valve station. The 2" water main loop is to be extended throughout the building with a series of 1" valved branch take offs and drops to allow for the connection of piping or hose to serve test equipment and experiments. Domestic water piping shall be type K or L copper with service provided to each fixture.

It is anticipated that domestic hot water demand for the new building will only be for lab and a work sinks. It is suggested that the domestic hot water be generated by an electric hot water heater and that a circulation system is be provided.

Natural Gas:

Natural gas supply for use at the fume hood, and the lab work benches is required. A new meter set and piping from the utility the new building are required. Provide 4 oz. pressure natural gas piping distribution system within the building.

Compressed Air:

A central compressed air system to serve the space is required. A medical quality air compressor and system are required. The air compressor system is to be provided with filter dryer and pressure reducing valve station. The compressed air piping system shall be looped in the building, with multiple air outlet branch piping drops. Each piping drop to have valved quick connects. The compressed air piping is to be extended to air outlets at the fume hood and to outlets at the lab work benches. The compressed air system shall be designed to deliver the required air quantity at 110 psi.

Sanitary Sewer:

The sanitary sewer and vent system shall be cast iron. The sewer shall be sloped and routed to meet current code requirements and to gravity slope to the existing sanitary sewer main located outside of building 59.

Floor drain systems are to be connected to a sand interceptor prior to connecting to the main sanitary sewer system. Additionally all drains from sinks are to be connected to sediment traps prior to the connection to the main sanitary sewer system.

MECHANICAL/PLUMBING

16.0 ELECTRICAL

ELECTRICAL

ELECTRICAL DESIGN NARRATIVE**CODES AND STANDARDS**

Codes, which are applicable to the design of the electrical systems, are listed below. Comply with each of the latest adopted publications:

ADA, Americans with Disabilities Act
ASHRAE 90.1 Energy Code
EIA/TIA, Electronics Industries Association/Telecommunications Industry Association
IBC 2003, International Building Code
IEEE 1100-1999, Recommended Practice for Power and Grounding Electronic Equipment
IESNA, Illuminating Engineering Society of North America
NFPA, National Fire Protection Association (applicable sections including but not limited to):
 NFPA 70, National Electrical Code
 NFPA 72, National Fire Alarm Code
UL, Underwriter's Laboratories
Utah State Fire Marshal Laws, Rules and Regulations
DFCM, Division of Facilities Construction and Management, Design Criteria
University of Utah Design Guidelines

SITE UTILITIES**High Voltage Power Distribution**

The new Fredrick Albert Sutton Geology and Geophysics building should be served from the campus 12,470 Volt distribution system. A new G&W pad-mounted 15 kV, 4-way High Voltage switch should be provided with two (2) protected switches and two (2) unprotected switch ways.

The new pad-mounted switch should tie to the existing high voltage switch located in the basement of the William Browning building. This switch currently provides power to the existing Ore Dressing Lab (ODL) building, which will be demolished to accommodate the construction of the new building.

The new high voltage switch should provide power to two (2) new oil-filled, air-cooled, pad-mounted transformers. Primary voltage for both transformers should be 12,470 volt; secondary voltage for one transformer should be 480/277 volts 3-phase WYE connection and the 2nd transformer, 208/120 volts, 3-phase WYE connection.

Telecommunication Distribution

The new Fredrick Albert Sutton Geology and Geophysics building should have two (2) separate connections to the campus distribution network. A total of four (4) 4" conduits should run from this building to existing communication manhole M-8 located on the Northeast corner of this new facility across 100 South on the Southeast corner of existing Kennecott building site.

A total of four (4) 4" conduits should run from this building to existing communications manhole M-7 located on the East side of the existing William Browning building.

Telecommunication work should comply with the University of Utah telecommunications design standards and all work should be coordinated with campus Netcom, who will be providing and installing cabling for this building.

ELECTRICAL

POWER DISTRIBUTION SYSTEMS

The main electrical room should be constructed to house a 480/277-volt and a 208/120-volt main distribution switchboard.

This room should be located as close as possible to the pad-mounted high voltage transformers to reduce the length of feeder conduit and conductors.

The 480/277 volt and 208/120 volt main distribution switchboards should be free standing and equipped with Square D. "Powerlogic"- type digital metering and should be tied to the campus central power monitoring system via a data line.

The 480/277 volt main distribution switchboard should be utilized to provide power to branch lighting panelboards, 480 volt machines, elevators, and large mechanical equipment such as air handlers, pumps, chillers, fans, etc.

The 208/120 volt main distribution switchboard should be utilized to provide power to branch power distribution panelboards for computer equipment, owner furnished equipment, duplex outlets, small mechanical equipment, etc.

Electrical rooms should be constructed on each floor on either end of the building to house the 480/277-volt and 208/120-volt branch panelboards. Three-phase, 208V, with neutral will be available in the primary computer equipment rooms.

Electrical rooms should be stacked on top of each other to reduce length of feeder runs.

Electrical rooms should have a minimum of 25% additional space for future growth.

Separate branch panelboards should be installed to feed power to computer equipment. Computers and any sensitive equipment should be tied to separate panelboards to isolate them from other equipment such as small mechanical equipment and general-purpose duplex outlets. Main distribution switchboards and branch panelboards should have 50% excess capacity for future growth and flexibility.

Transient voltage surge suppressors should be provided for 480/277 volt and 208/120-volt main distribution switchboards, also for computer equipment branch panelboards.

All conductors should be copper. Conductors for branch circuits should be sized to prevent voltage drop exceeding 3% at the farthest point with 80% of circuit breaker demand load (duplex outlets, equipment, etc.). The total voltage drop on both feeders and branch circuits should not exceed 5%.

All conductors shall be installed in conduit. Minimum size of conduit to be ¾". Type MC cable may be used for light fixtures whip. Conduit runs to cable trays should not exceed 50'. Install cable trays in the corridors. Provide pull strings in all empty conduit.

A fault current and selective device coordination study should be done to indicate available fault current at all points in the 15 kV and building power distribution system. New switchboards, panelboards, etc., should be adequately rated for the available fault current. Fuses and circuit breakers should be selected to ensure minimum system power outage due to overloads or faults. Circuit breakers with adjustable long time, short time, instantaneous and/or ground fault setting shall be set at levels for optimum system coordination.

Mechanical equipment requiring variable frequency drives (VFDs) should comply with DFCM standards for VFDs included in the “Design criteria for Architects and Engineers” posted on the DFCM website.

Uninterruptible Power System (UPS)

Provide two (2) 50 kVA UPS systems, connected in parallel, to support network computer equipment and seismograph stations computer equipment.

Provide a separate power distribution system for seismographic equipment. Distribution panelboards are to be installed in the rooms separate from each other.

Uninterruptible power system should be backed up 100% by a building diesel stand-by engine generator.

Uninterruptible power system should have 60 minutes battery back-up power. External maintenance bypasses should be provided for both UPS modules.

Standby Power Distribution System

Provide a standby diesel engine generator with an under-skid mounted fuel tank and sound attenuated enclosure. Support new building life safety equipment, network equipment, seismograph stations computer equipment, A/C equipment for network and seismograph stations computer equipment, Earthquake Information (EIC) equipment, outlets in IDF rooms, and other standby outlets as designated by the users. Standby diesel engine generator should have approximately 10% excess capacity for future growth and flexibility.

Fuel tank should be sized for 12 hours of engine operation at 100% load. University campus has the ability to refill the tank during an extended commercial power outage.

A separate automatic transfer switch should be provided for life safety equipment.

The new diesel engine generator should also provide stand-by power to the existing William Browning building. The existing 15 kw engine generator at William Browning building should be removed, including the existing automatic transfer switch, after new engine generator is installed, tested and put in operation.

A new automatic transfer switch should be installed in the William Browning building and should be tied to new emergency main distribution system in the Sutton Geology & Geophysics building.

OUTLETS

Locations and number of outlets should be coordinated for each space with users and comply with their needs and requirements. The following is to be used as general guidance:

Offices: For each workstation, provide two duplex outlets dedicated to computer terminals and one additional normal outlet for every 6' of wall space.

Conference and Board Rooms: One outlet for every 6' of wall space, plus one outlet dedicated to computer terminals on all walls. Provide floor outlets underneath conference room tables.

ELECTRICAL

Lounges/Breakrooms/Kitchenettes: GFI outlets on dedicated circuits every 4' on counter top plus dedicated outlets for refrigerator, microwave, and disposal (switched at counter top), plus one outlet for every 6' of other wall space in room.

Counter tops (in general): One outlet every 4'; GFI where within 8' of a sink.

Classrooms, Lecture Halls, Teaching Labs and other Instructional Spaces: Provide outlets for instructor's station, audio/visual equipment and each student. Ensure that there is at least one outlet for each 6' of wall space. Provide floor outlets where stations or equipment cannot be served directly from the wall without crossing aisle space. Where tables are fixed in place, coordinate power outlets mounted directly into the millwork.

Research Labs: Provide outlets for instruments, each table/desk, dedicated outlets for refrigerators, etc. Provide plug strip at counters. Provide a general-purpose outlet in each lab to be used for cleaning and maintenance. General-purpose outlets should not be tied to the lab equipment outlets or counter top outlets.

In Microbiology lab, provide 208V, single-phase receptacle for the centrifuge.

In Geochemistry lab, provide UPS power to fridge and freezer.

In HCPL-GC-TOC lab, provide UPS power to column experiment pumps.

In Microbiology lab, provide UPS power to freezer, refrigerator and shaker table.

Student Commons Areas, Lounges and Study Areas: Provide power outlets for laptop computers, at least one four-plex for each group of four seats, but no less than one outlet per each 6' of wall space. Provide floor outlets where stations or equipment cannot be served directly from the wall without crossing aisle space.

Telecommunication Rooms: Provide UPS outlets and emergency outlets for equipment, and a normal power duplex outlet for general-purpose use.

Electrical Rooms: At least one outlet on emergency power, designated by a red outlet with a red coverplate and labeled "EMERGENCY POWER".

Restrooms/Shower Rooms: One GFI outlet near each lavatory counter top.

Corridors: Provide at least one outlet every 25', on alternating sides of the corridor.

Lobbies: Provide at least one outlet every 6', on alternating sides of the lobby.

Stairs: One outlet at the landing of each level.

Storage Rooms (small), Janitors Closets: Two duplex outlets.

Building Exterior: One WP/GFI outlet near each entrance, and adequately spaced in the outside display and student interaction areas.

Grounding: Grounding Conductors

Grounding conductors should be installed with all feeder and branch circuits. Provide an additional isolated grounding conductor to all 120/208-volt branch panelboards to comply with University of Utah design standards.

Provide a grounding riser system throughout the telecommunication rooms with grounding bus bars mounted on the wall in each room. All raised floors should be grounded to the ground bus bars. Ground bus bars should be installed under the raised floors.

LIGHTING

General

Lighting design should comply with illuminance levels and uniformity criteria of IESNA and its recommended practices. Comply with RP1-93 "Office Lighting", RP3-00 "Lighting for Educational Facilities", and RP-33-99 "Lighting for Exterior Environments". Except for specialized applications, design lighting with a minimum efficacy of 64 lumens per watt. Specify maximum 20% THD electronic ballasts. In addition, design lighting with a CRI exceeding 82, except in storage, mechanical, electrical, and similar non-public applications. Where appropriate, different lamp types will be minimized. Use 4' T-8 lamps with CRI of 86 or greater wherever possible. Lamps should be specified to comply with EPA TCLP requirements.

Maintain foot candle light level in offices and computer labs to be approximately 30 FC, and 50 FC in the labs.

Comply with ASHRAE 90.1 requirements, except that overall energy target requirements should be exceeded by 15%. Design lighting control to harvest day lighting where practical, to control based upon occupancy, and according to programmable scheduling as applicable to the application.

Only campus standard lighting fixtures should be used for walkways, compatible with the campus surroundings. Exterior lighting should be controlled by combination photocell and time schedule.

Interior Lighting

In general, low-glare fluorescent lighting with electronic ballasts should be utilized. Pendant indirect lighting should be strongly considered, but must be carefully coordinated in rooms with projectors so that the fixtures will not interfere with the projected image. Select luminaries for areas where VDTs are planned which are designed to minimize veiling reflections, and provide multilevel lighting control and task lighting to reduce the illuminance on the VDT. In addition, in rooms with audio/visual, provide lighting with variable or switched levels as indicated with a separate controlled zone to reduce glare and illuminance on the audio/visual display. In origination rooms, design dimming system to interface with audio/visual control system. Include in addition, TV studio lighting fixture to focus and highlight on instructor in origination rooms. In rooms with projectors, provide a separate bank of lighting control switches or station near the instructor position for ease of controlling lighting during presentations. Comply with RP-3-00 for classroom lighting, except increase illuminance to 75 fc (variable). Comply with RP-1-93 for office lighting.

Occupancy sensors should be used for the appropriate applications and control for daylight harvesting. Specify dual technology ceiling mounted directional sensors in private offices and classrooms with manual off-switches. Ultrasonic sensors should be in restrooms. Programmable lighting control with manual timed overrides should be in all common areas such as open offices, corridors, lobbies, and similar areas.

ELECTRICAL

Maximum connected lighting load in the building should not exceed 1.5 watts per square foot.

Provide exit lighting to comply with IBC. Emergency lighting should be designed for means of egress to 1 fc minimum to comply with IBC. Include emergency lighting in restrooms, electrical rooms, communication rooms, etc.

FIRE ALARM SYSTEM

Fire alarm system should be designed to comply with Utah State Fire Marshall's "Rules and Regulations" and University of Utah Design Standards. Only FCI as distributed by Nelson Fire Systems is allowed on campus. An addressable fire alarm system should be designed capable of networking with the campus system and reporting back to central campus fire alarm system in building 301 via data network cards. Design strobes visible from all locations except private offices.

Horn installation should comply with NFPA including for higher ambient noise requirements. Where smoke control systems are required, the integration of the fire alarm with the smoke control systems should be coordinated. Provide duct detectors and fan shutdown where required by NFPA and the IMC, including detection of smoke at all return air shafts servicing multiple floors. Coordinate location of the building fire alarm control panel and annunciator panel with the Campus fire marshal.

TELECOMMUNICATION SYSTEM**General**

The voice and data system should consist of two main categories: 1) Pathways and Spaces to support the voice and data system, and 2) The structured cabling system provided by the University of Utah Network Communications Department.

Pathways And Spaces

There should be two main equipment rooms (ER's); one for the College of Mines and Earth Sciences (CMES) and the other for the Seismograph Station. These rooms should house the main computer and phone equipment that serves the building, and in the case of the Seismograph ER, it should house all of the Seismograph data processing computers and equipment. These should be two separate rooms, with separate access, but may share a common wall. Each equipment room should be a minimum of 300 square feet in size. Both equipment rooms should be located in the basement floor.

The CMES ER should house the telecommunications entrance facilities for the campus network. A total of eight (8) 4" conduits should run from the CMES ER to campus network manholes, four (4) to the north to the suggested manhole M-8, and four (4) to the south to a separate manhole, M-7. Manhole M-8 is located at the southeast corner of the existing Kennecott Building site, across 100 South, and manhole M-7 is located on the east side of the existing William Browning Building.

A minimum of two (2) 3" conduits should be run from each ER and the upper level telecommunication room (TR) to the roof of the building for roof mounted external wireless communications. One (1) 4" conduit or two (2) 3" conduits should be run from the seismograph station ER to the roof of the Browning building.

Each floor should have at least one telecommunications room (TR) that is 80 square feet in size. Additional TR's of the same size may be required on each floor if the horizontal cable length to a telecommunications outlet (TO) exceeds 90 meters.

TR's should be located directly above each other to allow sleeving of the floor between the rooms to accommodate backbone cabling. One set of stacked TR's should be located directly above the CMES ER, to facilitate sleeving between the rooms and backbone cabling.

Each floor should have cable tray system that covers the entire floor. The cable tray system should connect TR's on the same floor. It should also be extended into each classroom or laboratory.

ELECTRICAL

Mechanical fire stop systems should be utilized where the cable tray passes through fire rated partitions to allow for moves, adds, and changes in a flexible and easy manner. Wherever possible, each room should have cable tray entering the room from two directions to maximize flexibility and future moves, adds, and changes. The cable tray should be a minimum of 18" wide with a 2" loading depth.

Each TO should utilize a 4" square by minimum 2-1/8" deep junction box with a single-gang mud-ring. Two 3/4" conduits should be run from each junction box to the nearest cable tray and a protective bushing should be provided at the end of the conduit at the cable tray.

STRUCTURED CABLING SYSTEM

The structured cabling system shall be designed and installed by the University of Utah Network Communications Department (Netcom). The following information is provided only for documentation of the requirements of the user. Final design requirements must be provided to Netcom, so that Netcom can provide a tailored solution for the occupants of the new building. The electrical engineer should coordinate their work closely with Netcom to provide the best and most flexible environment for the structured cabling system.

The structured cabling system should be designed to support high-speed voice/data/video and future high bandwidth applications. The system should be a University of Utah standard Siemon-CommScope category 6 solution or the applicable standard at the time of construction.

The campus network service entrance and ERs-to-ERs cabling should be fiber-optic. Backbone cabling within the building should be both fiber optic and unshielded twisted pair (UTP) copper. Horizontal cabling to each TO should be UTP copper. All fiber optic cabling should be terminated in rack mounted patch panels. Fiber optic cabling should connect computer ER's to all TR's

Each TO should have at least two Category 6 RJ-45 4-pair ports with a dedicated horizontal Category 6 cable ran from the floor TR to each port. Horizontal cabling should be terminated on rack mounted patch panels in the TR. Each TR should have a minimum of two 7'-0" high, 19", two-post racks.

SECURITY SYSTEMS

Security system should comply with campus standards (Johnson controls). Security system should annunciate alarm condition to, and be completely monitored by the University of Utah campus police department.

The security system should include measures to protect materials on public display. The first layer of protection shall be perimeter alarms such as door contacts and possibly glass break sensors on exterior doors to monitor these possible entry points after hours. The second layer of protection shall consist of passive infrared motion sensors that would detect human movement in the areas to be secured. The third layer of protection should include security cameras. The second and third layers could be combined by using digital cameras that monitor motion by changes in the pixels of the image. The fourth and final layer would consist of tamper protection at the displays. This could include glass break sensors or other similar types of sensors that would generate an alarm if a display is broken into or tampered with.

It is recommended that the above security system used digital Internet Protocol (IP) cameras in conjunction with a digital video recorder and server. This will allow access to the system by authorized personnel over the Internet.

CLOCK SYSTEM

Provide battery-operated clocks in classrooms, public areas, common areas, etc. Locations of the clocks should be coordinated with the users.

Provide at least one GPS receiver/transmitter at a central location with a roof mounted antenna. The GPS receiver should provide NTP (Network Time Protocol) to a directly connected computer system. Clocks should be correctable by either Code Division Multiple Access (CDMA) or the Global Positioning System (GPS) transmission via wireless communication directly to each clock.

ELECTRICAL

IVOR THOMAS HIGH BAY LAB

SITE UTILITIES

High Voltage Power Distribution

The new Ivor Thomas high bay lab should be served from the campus 12,470 Volt distribution system.

A new 15 kv, 4-way SF6 H.V. switch should be installed in existing electrical manhole 921 with two (2) protected switches and two (2) unprotected switch ways. The new switch should be tied to existing 15 kv high voltage line.

The new high voltage switch should provide power to a new oil-filled, air-cooled, pad-mounted transformer. Primary voltage for this transformer should be 12,470 volt; secondary voltage should be 480/277 volts 3-phase WYE.

Telecommunication Distribution

The new Ivor Thomas high bay lab will be supported from existing building 59. Two (2) 2" conduit should be installed between the telephone terminal board in the new building and existing telephone terminal board in building 59.

Telecommunication work should comply with the University of Utah telecommunications design standards and all work should be coordinated with Campus Netcom, who will be providing and installing cabling for this building.

POWER DISTRIBUTION SYSTEMS

The 480/277-volt, a 120/240-volt, and a 208/120-volt main distribution switchboards and step down transformers should be installed in the high bay lab area.

The 480/277 volt main distribution switchboards should be free standing and equipped with Square D. "Powerlogic"- type digital metering and should be tied to the campus central power monitoring system via a data line.

The 480/277 volt main distribution switchboard should be utilized to provide power to branch lighting panelboards, 480-volt machines, and mechanical equipment, etc.

The 208/120 volt main distribution panelboard should be utilized to provide power to a branch 120/208 volt panelboards, owner furnished machines, duplex outlets, small mechanical equipment, etc.

A buck/boost transformer with distribution panel should be provided to support 220 volt owner-furnished machines.

The 240/120 volt main distribution panelboard should be utilized to provide power to owner-furnished 240 volt machines, etc.

Transient voltage surge suppressors should be provided for 480/277 volt main distribution switchboard.

All conductors shall be installed in conduit. Minimum size of conduit to be ¾" – type MC cables can be used for light fixtures from J-box on ceiling deck to light fixtures. Provide pull strings in all empty conduit.

All conductors should be copper. Conductors for branch circuits should be sized to prevent voltage drop exceeding 3% at the farthest point with 80% of circuit breaker demand load (duplex outlets, equipment, etc.). The total voltage drop on both feeders and branch circuits should not exceed 5%.

A fault current and selective device coordination study should be done to indicate available fault current at all points in the 15 kV and building power distribution system. New switchboards, panelboards, etc., should be adequately rated for the available fault current. Fuses and circuit breakers should be selected to ensure minimum system power outage due to overloads or faults.

OUTLETS

Locations and number of outlets should be coordinated with users and comply with their needs and requirements. The following is to be used as general guidance:

High Bay Lab: Provide power to all owner-furnished machines. Provide female and male plugs as needed. Provide site disconnect switches for all large machines such as grinding mills, hot press, milling machines, etc. This work must be coordinated with the owner.

Telephone Terminal Board: Provide a 4-duplex outlet.

Building Exterior: One WP/GFI outlet near each entrance.

Grounding: Grounding Conductors

Grounding conductors should be installed with all feeder and branch circuits. Provide an additional isolated grounding conductor to all 120/208-volt branch panelboards to comply with University of Utah design standards.

Provide a Ground Bus bar by Telephone Terminal Board.

LIGHTING

General

Lighting design should comply with illuminance levels and uniformity criteria of IESNA and its recommended practices. Specify maximum 20% THD electronic ballasts. Use 4' T-8 lamps with CRI of 85 or greater wherever possible. Lamps should be specified to comply with EPA TCLP requirements.

Comply with ASHRAE 90.1 requirements, except that overall energy target requirements should be exceeded by 15%. Design lighting control to harvest day lighting where practical, to control based upon occupancy, and according to programmable scheduling as applicable to the application.

Relocate two (2) existing campus standard light poles to accommodate construction of this new high bay lab.

ELECTRICAL

Interior Lighting

In general, fluorescent lighting with electronic ballasts should be utilized. Provide T-8 fluorescent light fixtures in the high bay lab.

Occupancy sensors should be used for the appropriate applications and control for daylight harvesting.

Provide exit lighting to comply with IBC. Emergency lighting should be designed for means of egress to 1 fc minimum to comply with IBC.

FIRE ALARM SYSTEM

Fire alarm system should be designed to comply with Utah State Fire Marshall's "Rules and Regulations" and University of Utah Design Standards. Only FCI as distributed by Nelson Fire Systems is allowed on campus. An addressable fire alarm system should be designed capable of networking with the campus system and reporting back to central campus fire alarm system in building 301 via data network cards. Design strobes visible from all locations.

Horns' installation should comply with NFPA including for higher ambient noise requirements. Provide duct detectors and fan shutdown where required by NFPA. Coordinate location of the building fire alarm control panel with the Campus fire marshal.

TELECOMMUNICATION SYSTEM

Provide a 4' x 8' plywood board for a wall field and a wall-mounted telecommunications rack.

Two 2" conduits should be run from the existing building 59 to the new Telephone Terminal Board.

Provide voice/data outlet for any equipment that requires data connections. Coordinate with owner.

17.0 COST ESTIMATE

COST ESTIMATE

The construction budget given for the project at the beginning of programming was \$16,943,875.00. The following conceptual estimate of construction costs totals \$16,916,856. This cost estimate is based on site option E, which is the lowest-cost option. The designers should evaluate site options, including the ultimate location of the high-bay space, based on factors including, but not limited to, construction cost. At the time this program was completed, the preferred site options were E and E₁. For information on relative costs of these and other site options, see Appendix 18.3.

See Executive Summary for an overview of total project costs.

COST ESTIMATE

PROJECT ESTIMATE	CONSTRUCTION CONTROL CORPORATION	2/24/2005
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PROJECT NAME.....FREDERICK SUTTON GEOLOGY BUILDING		
LOCATION.....UNIVERSITY OF UTAH		
ARCHITECT.....CRSA	SF	95,241
STAGE OF DESIGN.....PROGRAMMING		

CSI #	DESCRIPTION	SF COST	TOTAL
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COST SUMMARY

IVOR THOMAS BUILDING			
HIGH BAY BUILDING	4200 SF	\$ 165.00	\$ 693,000.00
IVOR THOMAS BUILDING TOTAL			\$ 693,000.00
FREDERICK SUTTON BUILDING			
FREDERICK SUTTON SHELL	90094 SF	\$ 69.00	\$ 6,216,486.00
IVOR THOMAS BUILDING DEMOLITION	12,000 SF	\$ 2.75	\$ 33,000.00
CONNECTOR SHELL	6100 SF	\$ 115.00	\$ 701,500
CONNECTOR INTERIOR FINISHES	5050 SF	\$ 100.00	\$ 505,000
COLLEGE OF MINES ADMINISTRATION FINISHES	3370 SF	\$ 54.00	\$ 181,980
DEPT OF GEOLOGY ADMINISTRATION FINISHES	1310 SF	\$ 54.00	\$ 70,740
INTERNAL PROCESSES FINISHES	3780 SF	\$ 49.00	\$ 185,220
SEISMOGRAPH OFFICE FINISHES	1200 SF	\$ 49.00	\$ 58,800
EARTHQUAKE INFORMATION CENTER	1110 SF	\$ 185.00	\$ 205,350
SURFACE PROCESSES OFFICE FINISHES	2160 SF	\$ 50.00	\$ 108,000
SURFACE PROCESSES LABORATORY FINISHES	1040 SF	\$ 80.00	\$ 83,200
WATER EARTH SYSTEMS OFFICES FINISHES	1790 SF	\$ 50.00	\$ 89,500
WATER EARTH SYSTEMS LABORATORY FINISHES	720 SF	\$ 80.00	\$ 57,600
EARTH HISTORY OFFICE FINISHES	940 SF	\$ 49.00	\$ 46,060
EARTH HISTORY LABORATORY FINISHES	400 SF	\$ 80.00	\$ 32,000
EARTH RESOURCES OFFICE FINISHES	2130 SF	\$ 49.00	\$ 104,370
EARTH RESOURCES LABORATORY FINISHES	640 SF	\$ 80.00	\$ 51,200
GRAD STUDENT OFFICES	550 SF	\$ 49.00	\$ 26,950
SAMPLE PREPARATION AREA FINISHES	2210 SF	\$ 165.00	\$ 364,650
COLLECTIONS/CURATION FINISHES	4330 SF	\$ 79.00	\$ 342,070
GENERAL STORAGE FINISHES	2400 SF	\$ 28.00	\$ 67,200
COMMON AREAS	4380 SF	\$ 42.00	\$ 183,960

PROJECT ESTIMATE	CONSTRUCTION CONTROL CORPORATION	2/24/2005
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PROJECT NAME.....FREDERICK SUTTON GEOLOGY BUILDING		
LOCATION.....UNIVERSITY OF UTAH		
ARCHITECT.....CRSA	SF	95,241
STAGE OF DESIGN.....PROGRAMMING		

CSI #	DESCRIPTION	SF COST	TOTAL
	COMMON CLASSROOMS 3700 SF	\$ 42.00	\$ 155,400
	TEACHING LABS FINISHES 4200 SF	\$ 80.00	\$ 336,000
	CHEMISTRY GROUP LAB FINISHES 5520 SF	\$ 85.00	\$ 469,200
	SCOPE & BEAM GROUP LAB FINISHES 2340 SF	\$ 85.00	\$ 198,900
	MATERIALS & MECHANICS GROUP LAB FINISHES 2640 SF	\$ 85.00	\$ 224,400
	COMPUTER RESEARCH GROUP LAB FINISHES 2380 SF	\$ 85.00	\$ 202,300
	PUBLIC, COMMONS, & CORRIDOR FINISHES 35801 SF	\$ 40.00	\$ 1,432,040
	FREDERICK SUTTON BUILDING TOTAL 91041 SF		\$ 12,733,076
	SUBTOTAL	\$ 140.97	13,426,076
	GENERAL CONDITIONS 6%	\$ 8.46	805,565
	OVERHEAD & PROFIT 5%	\$ 7.05	671,304
	DESIGN CONTINGENCY 15%	\$ 21.15	2,013,911
	TOTALS	\$ 177.62	\$ 16,916,856

18.0 APPENDICES

- 18.1 RECOMMENDED ADJACENCY DIAGRAMS**
- 18.2 SUGGESTED SCHEDULE FOR DESIGN AND
CONSTRUCTION**
- 18.3 CHOOSING THE SITE FOR THE SUTTON BUILDING**
- 18.4 DEVELOPING THE SUGGESTED LAYOUT FOR THE
SUTTON BUILDING**

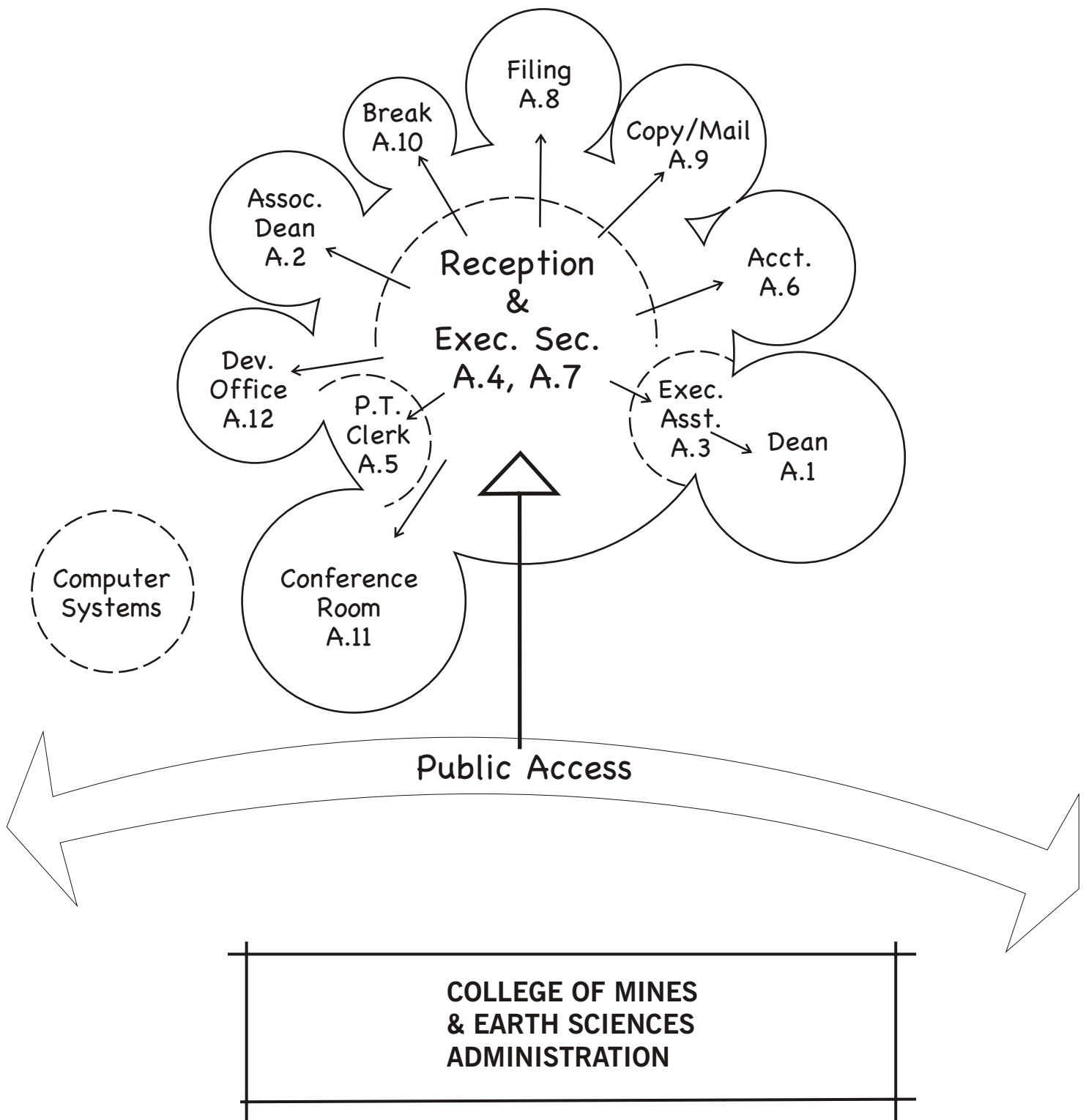
APPENDICES

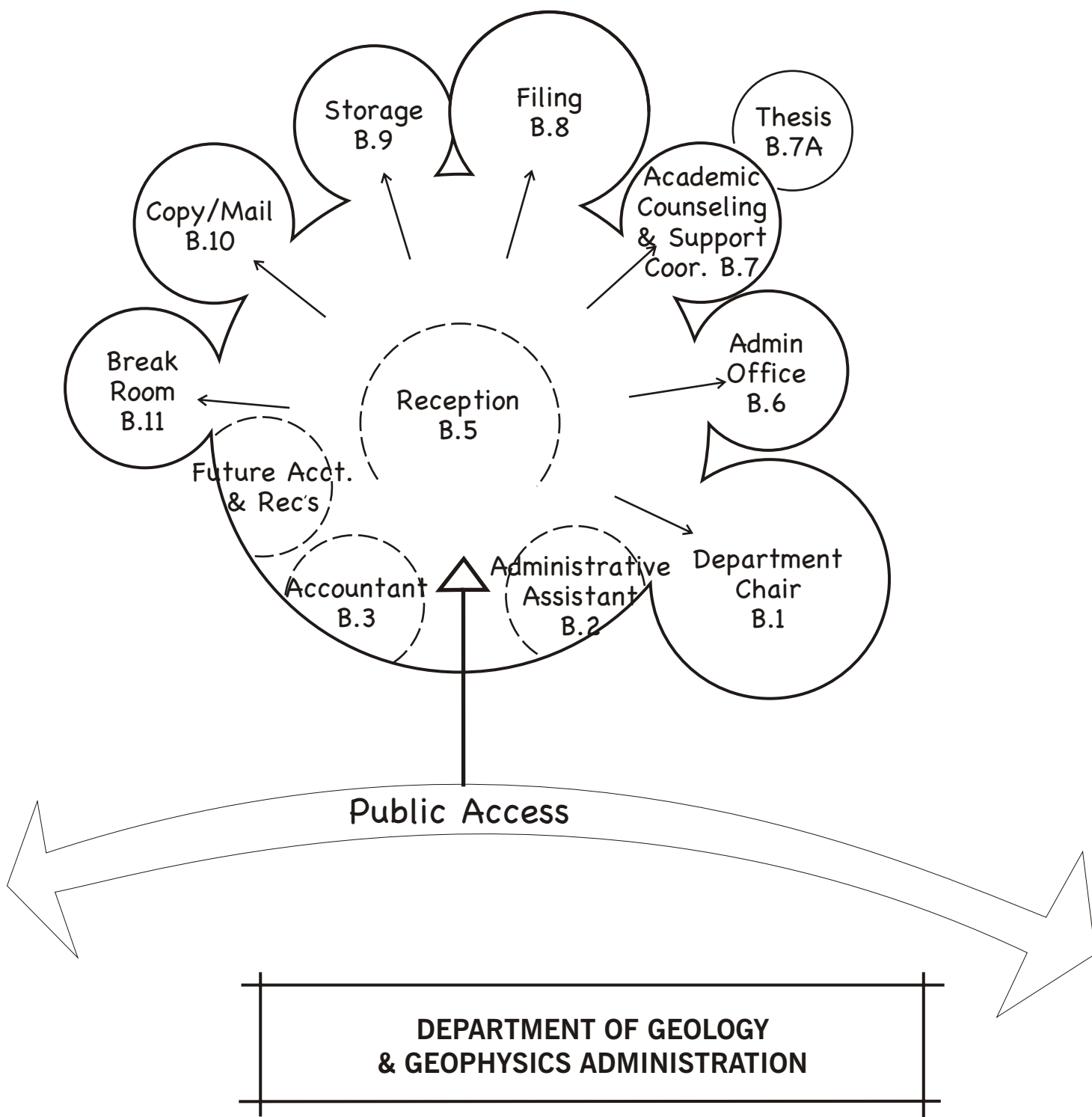
18.1 RECOMMENDED ADJACENCY DIAGRAMS

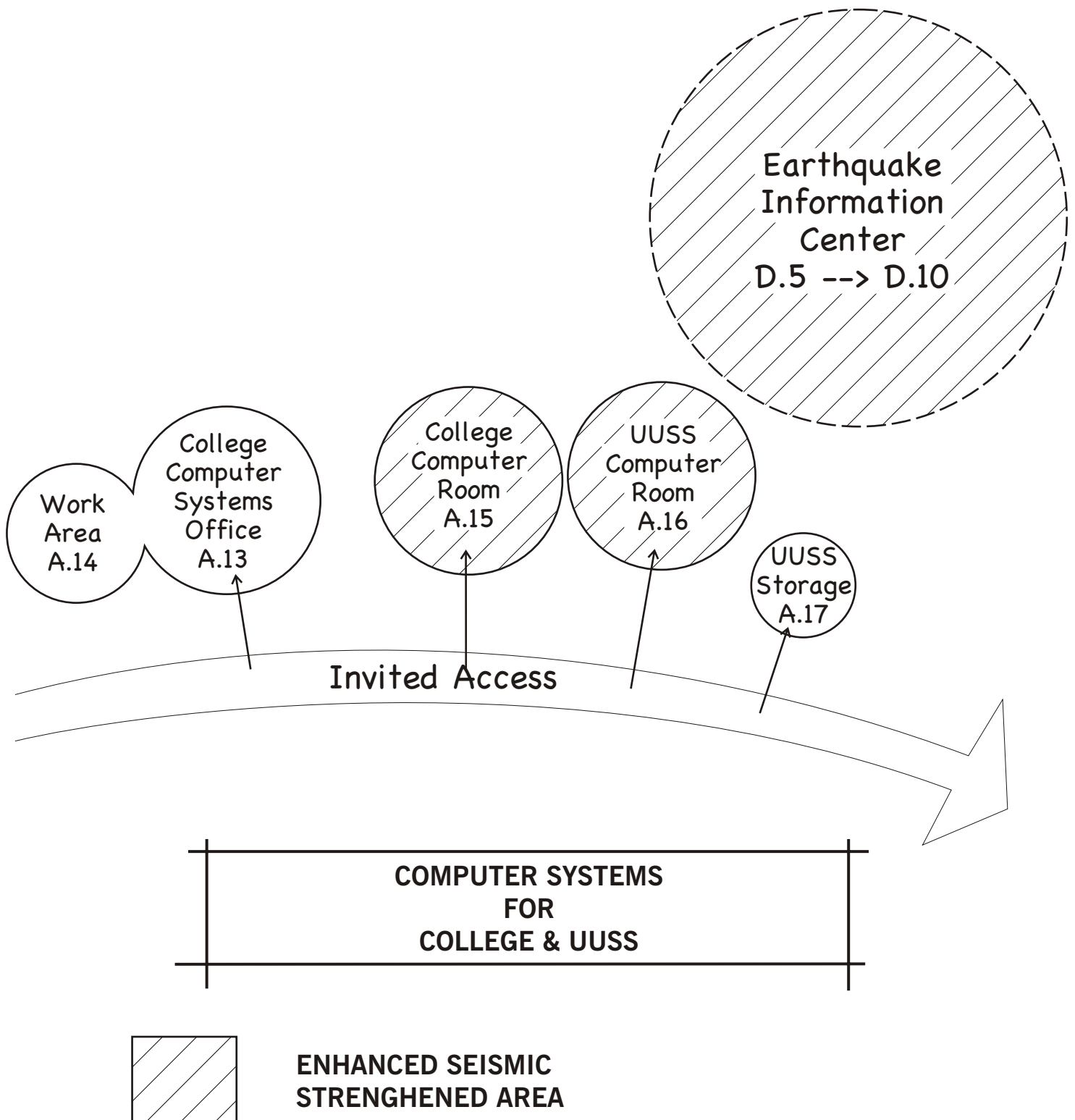
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2. DEPARTMENT OF GEOLOGY & GEOPHYSICS ADMINISTRATION
3. COMPUTER SYSTEMS FOR COLLEGE & USS
4. USS BASIC ELEMENTS
5. USS EARTHQUAKE INFORMATION CENTER & RESPONSE
ROOM
6. IVOR THOMAS HIGH BAY LAB

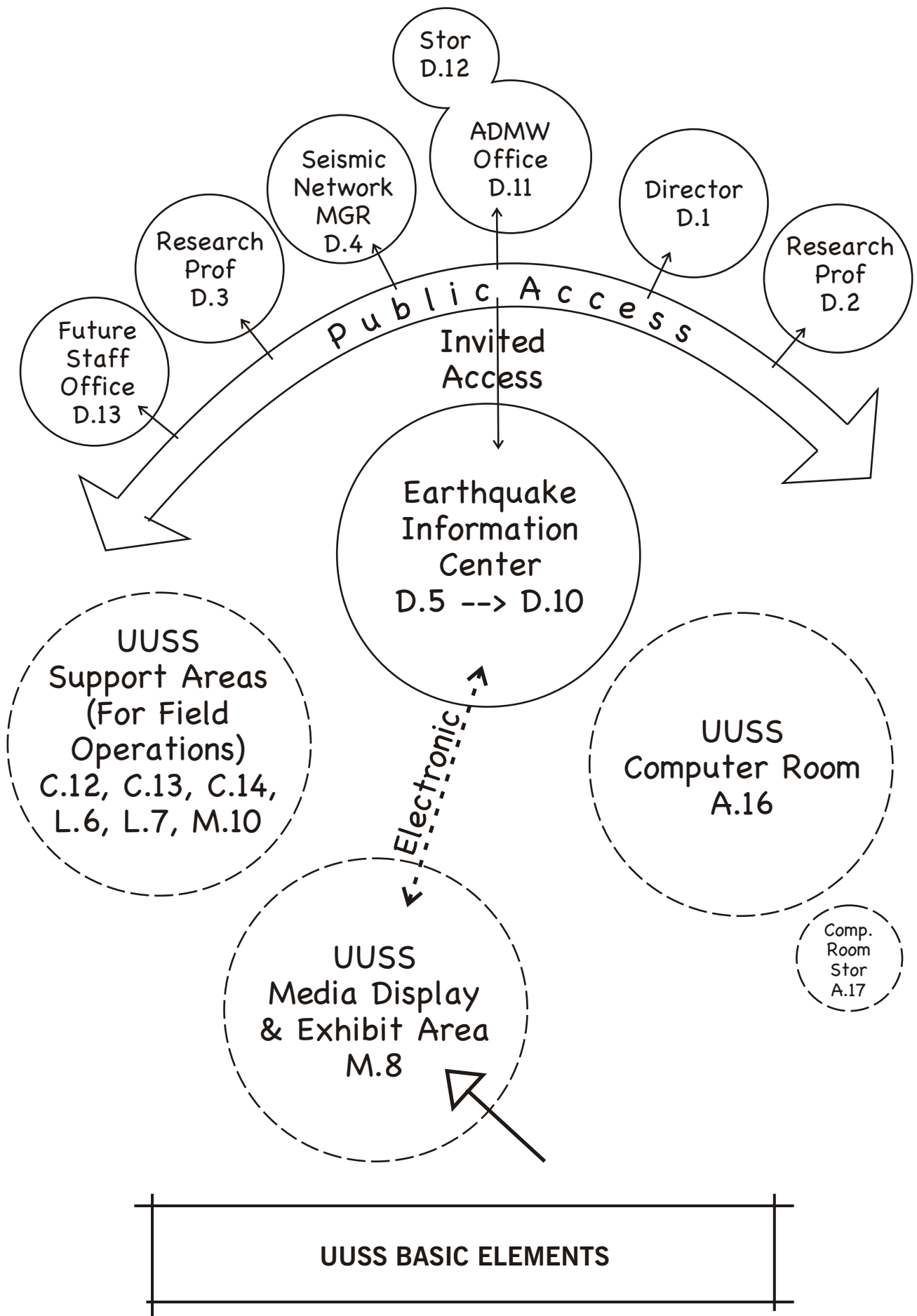
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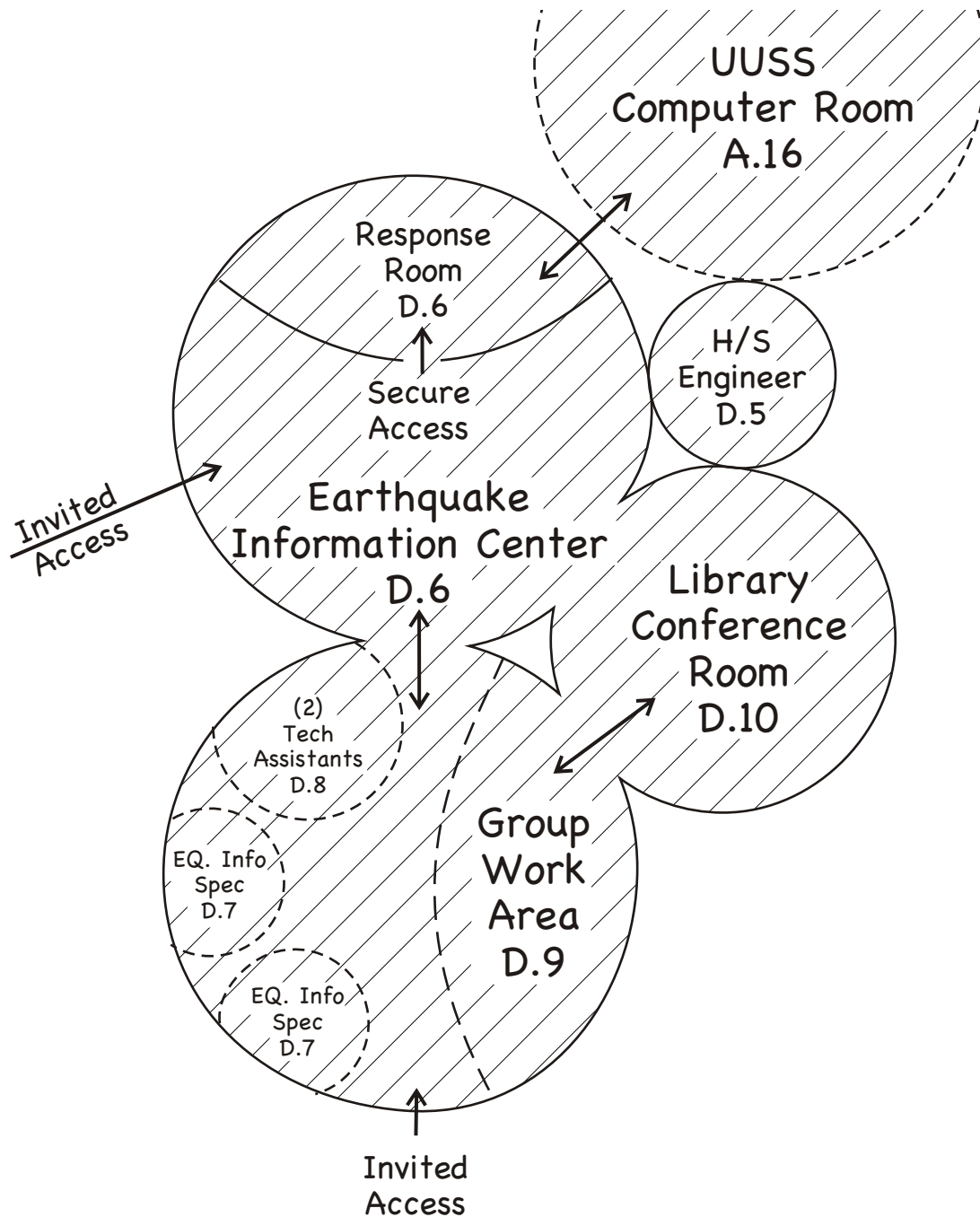
RECOMMENDED ADJACENCY DIAGRAMS



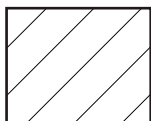




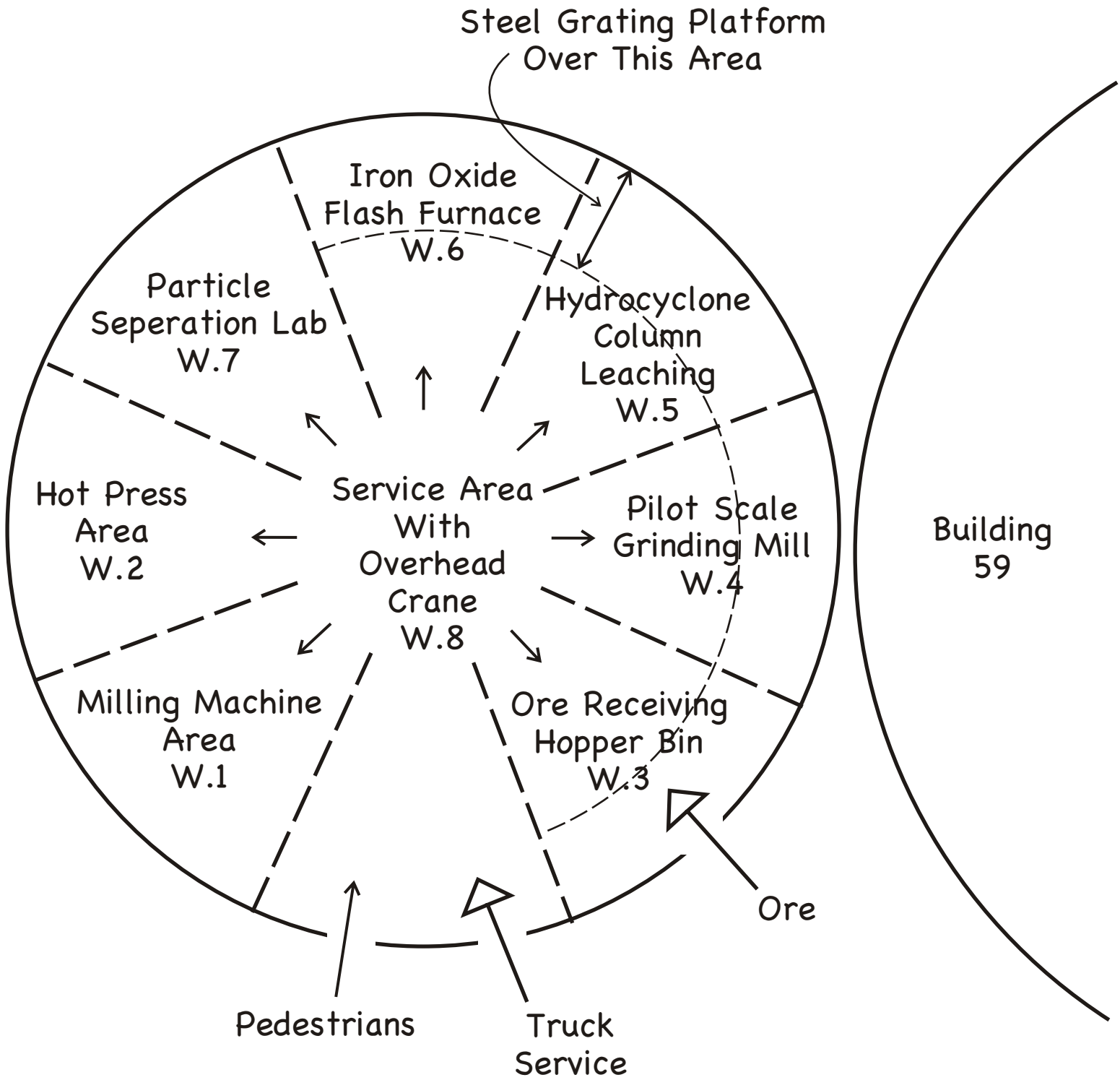




**USS EARTHQUAKE INFORMATION
CENTER & RESPONSE ROOM**



**ENHANCED SEISMIC
STRENGTHENED AREA**

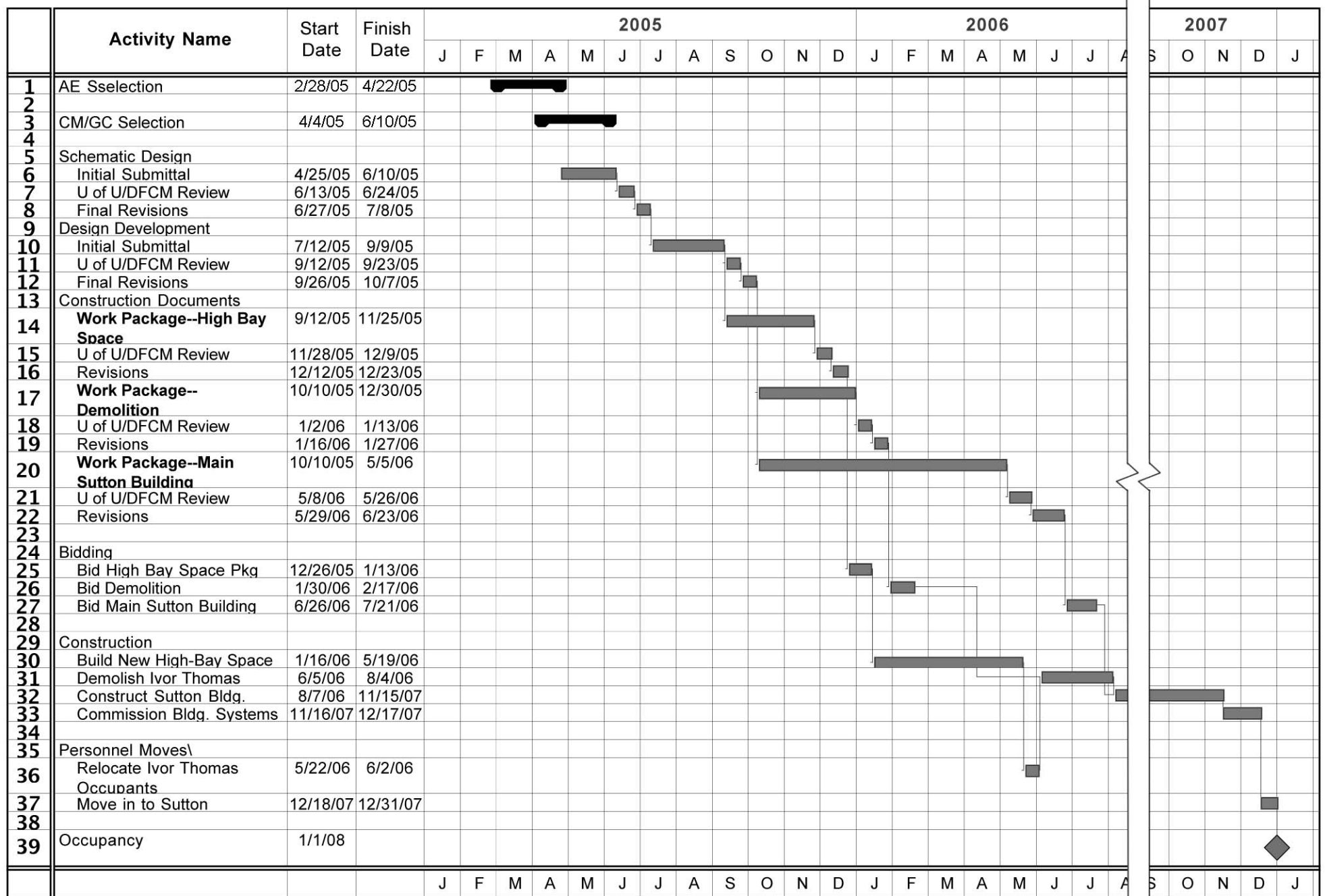


IVOR THOMAS HIGH BAY LAB

18.2 SUGGESTED SCHEDULE FOR DESIGN AND CONSTRUCTION

APPENDICES

Sutton Geology and Geophysics Building



Proposed Schedule

18.3 CHOOSING THE SITE FOR THE SUTTON BUILDING

APPENDICES

Choosing the Site for the Sutton Building

Background

The programming team and the College of Mines and Earth Sciences began work on the design program for the Frederick Albert Sutton Geology & Geophysics Building with a faculty kick-off meeting July 15, 2004. Shortly thereafter, the College established a working group to meet with the programming team on a regular basis, gather input from college and department faculty as a whole, and make recommendations to the Steering committee. This committee is made up of representatives of the Geology & Geophysics Department, The College of Mines & Earth Sciences, Campus Design & Construction and DFCM.

Since many members of the faculty were unavailable for detailed input to the program during the summer, one of the first things the working group considered was site selection. Reviewing appropriate sites for the future structure became a major item on the group's agenda for the 2nd meeting of the working group, held August 3. At that meeting, the programming team presented and the working group considered site options A, B, and C (as depicted below). The consensus of the group was to pursue option A unless a red flag came up.

Almost immediately thereafter, metallurgical engineering faculty raised issues related to demolishing their space before a viable replacement facility was available—a situation that would require two moves on their part and might require that their equipment be out of commission for many months. They suggested leaving the existing Ivor Thomas lab in place and building the Sutton Building elsewhere, either where shown in scheme B or C or in the parking lot south of the Sutton Building (which was never on the table due to major issues both with utilities and with the University's Long Range Development Plan [LRDP]).

At one of its next meetings, the working group reviewed the concerns raised by the Metallurgy faculty and decided to bring the issue to the steering committee for approval. As the programming team and members of the working group collaborated in preparation for the steering committee meeting and continued to review the concerns raised by the metallurgical engineering faculty, the group developed two new schemes (Option D and E) that addressed the metallurgical engineering faculty objections while maintaining the Sutton building in the location preferred by the working group. This option became the preferred option of both the programming team and the working group.

In its first meeting (August 27, 2004), the steering committee, made up of representatives of The College of Mines & Earth Sciences, The Department of Metallurgical Engineering, Special Assistant to the President, and the Senior Vice President for Academic Affairs approved option E.

Site selection options A, B, C, D, and E were reviewed with Facilities Planning and Campus Design & Construction in a meeting August 30, 2004. The programming team

provided background information on the schemes showing the reasons scheme E had been selected by the working group and the steering committee. The meeting minutes record that “Scheme E was judged the best option.” Facilities Planning agreed to review the location in more detail, and the programming team was told to proceed based on that scheme until notified otherwise.

On September 13, a staff member from facilities planning met with members of the programming team, the Dean of CMES, and a member of his staff to review concerns within facilities planning about the location of the high-bay space in scheme E. The specific concerns mentioned had to do with the fact that the LRDP did not anticipate having a new structure in that location. Additionally, a sidewalk would likely be affected somewhat by the new building. The programming team and the college explained the reasons why other locations had not been considered. These issues are summarized under the advantages and disadvantages listed for specific schemes below.

On October 12, the programming team released a 60% draft of the program document that included sketches of schemes A through E along with lists of advantages and disadvantages similar to those included in this document.

Members of the Facilities Planning staff asked to meet with representatives of the college and programming team the afternoon of October 13. After explaining the reasons for the selection of scheme E, the programming team was asked to take another look at the exact location of the high bay space, to review cost issues, and to prepare a report summarizing the history, issues, and costs associated with all the site options. As a result of this meeting, the design team identified two variations on scheme E (E_1 and E_2).

In light of the two new variants of scheme E on the table, The Steering Committee reconsidered site selection and again approved Scheme E in its meeting of October 28, 2004.

On November 3, the programming team presented a detailed document outlining site selection considerations for facilities planning and CMES. In addition to advantages/disadvantages, this study discussed cost and schedule implications—as requested—and included options E_1 and E_2 .

The current draft of this same document has now been re-worked as requested by facilities planning to provide additional background information, list additional advantages and disadvantages for the E schemes, and re-work the numbers using option A as the base case. This was requested since that option most closely matches the LRDP and is the option the working group first recommended.

Options B, C, and D have not been actively considered for several months now and are presented below for historical/background information only.

Site Selection Factors Considered

Minimizing Multiple Relocations

A project goal that affects how we evaluate site options is the College's objective to minimize the number of people and functions that will need to be relocated more than once. Many of the pieces of the equipment are very expensive to move. Moving twice would expend funds needed for the new building project. Given the preferred site scheme, which requires demolition of the Ivor Thomas Ore Dressing Lab, special arrangements must be made for several pieces of equipment in that lab requiring high-bay space. If we are to avoid moving that equipment twice, provision must first be made for the required functions housed in the Ivor Thomas Ore Dressing Lab before construction can begin on the new Sutton Building. The same would be true if the new building were to be built on the site of the Mines Building. Numerous labs, equipment, faculty and other departments are currently in the Mines Building. Moving twice would be inevitable for these functions, and no location currently exists to house them temporarily.

High Bay Space

When the Ivor Thomas Ore Dressing Lab is removed, provision must be made for the ore dressing and other equipment that requires high bay space. Equipment that requires more than 11 feet of clear space below the roof structure cannot feasibly be moved into any available existing College facility. Accordingly, if the Sutton Building is to be located where the Ivor Thomas Lab currently sits, design of the new facility must include a new high-bay space. The space may be designed as an addition to an existing building or a component of the new building, but budget constraints would rule out a stand-alone building of such a small size. It must be built in a location not affected by demolition of the Ivor Thomas Lab.

When new high bay space is built, as recommended in the draft program, donor requirements call for the new space to be known as the Ivor Thomas Lab.

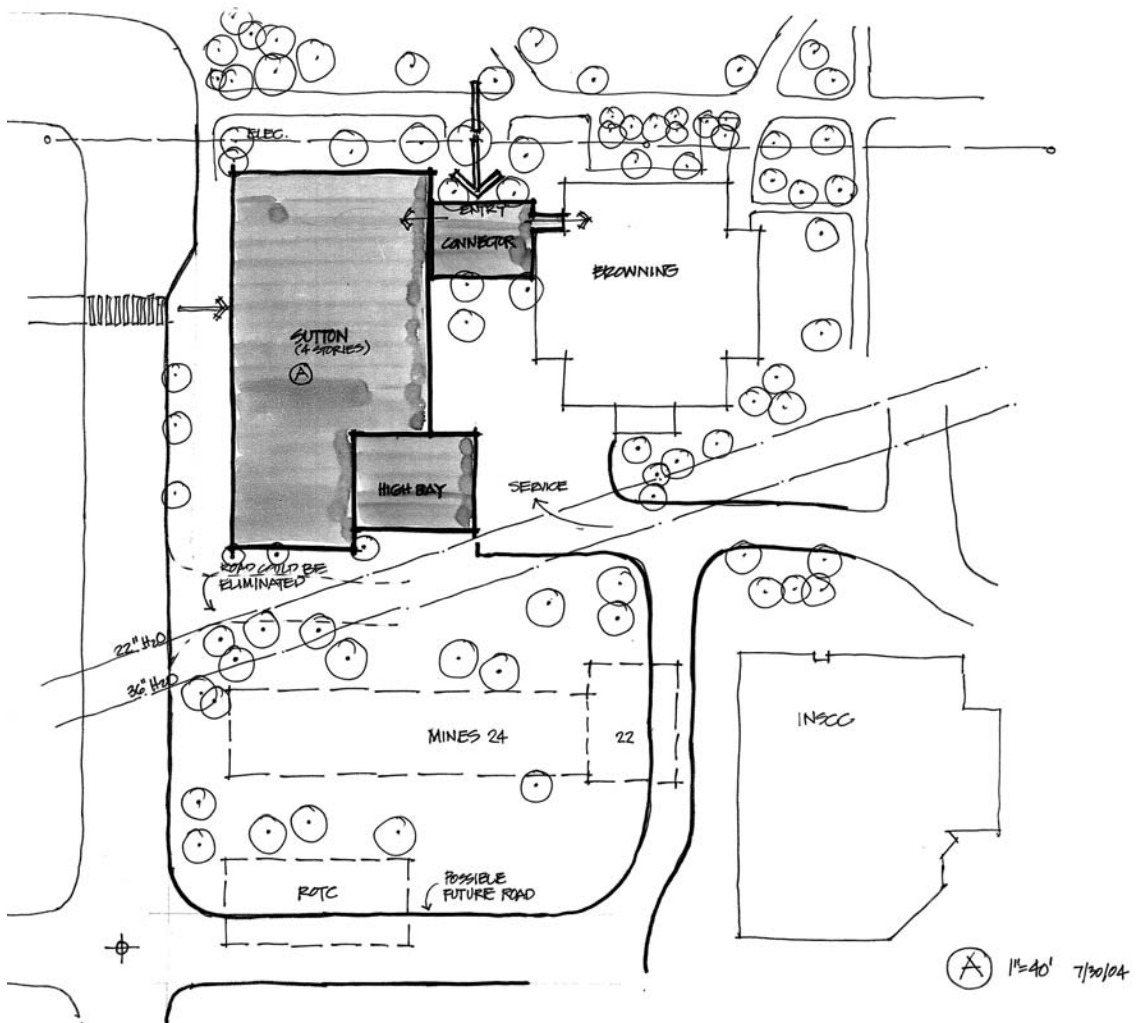
Phased Construction

The recommendation to create a new, separate high bay space requires that this space be constructed before the Ivor Thomas Ore Dressing Lab is vacated. Accordingly, construction will require at least two phases: completion of the high bay space followed by relocation of necessary functions out of the existing Ivor Thomas Ore Dressing Lab, demolition of that structure, and commencement of construction on the Sutton Building.

Site Options

The following pages depict the site options considered by the planning team.

Scheme A – NORTH OF BROWNING BUILDING (with high bay space attached)



Scheme A

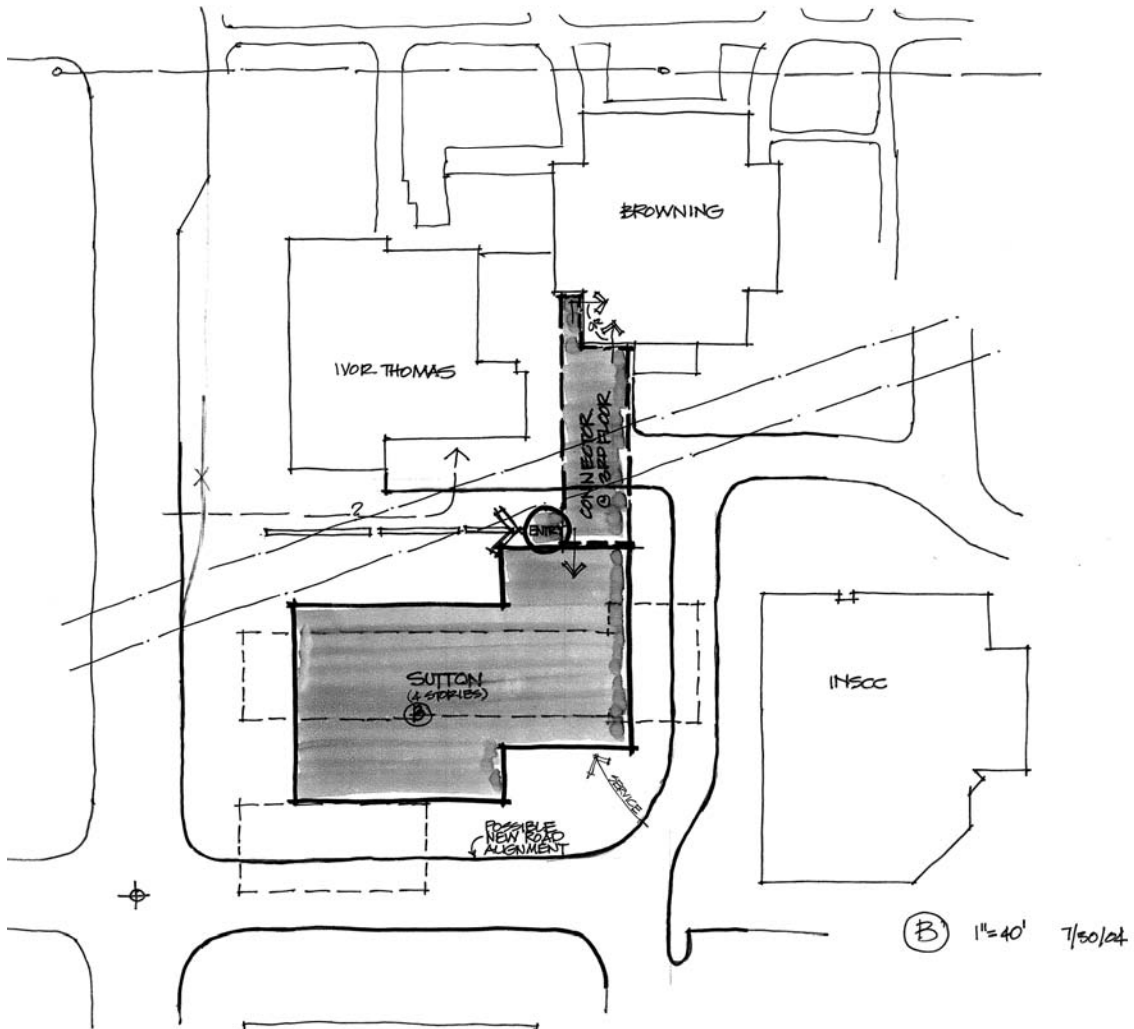
ADVANTAGES

- College will be consolidated.
- The 60-year-old Ore Dressing Building will be replaced with a new facility.
- An attractive building can be the anchor for this location on campus.
- Neither Mines nor ROTC need to be demolished at this time.
- Mines occupants can remain until Sutton Bldg. is completed.
- There will be a direct connection to Browning Bldg. on several floors.
- A single, clear main entrance is achievable.
- Service areas are consolidated for Browning, Ivor Thomas, and Sutton Bldg.

DISADVANTAGES

- One major utility may need to be moved.
- Ivor Thomas Lab will be replaced, therefore users will need to move, perhaps twice.
- Ivor Thomas Lab must be demolished before construction can begin and either temporary or permanent locations must be found for users. If temporary, a location must be found and that will result in increased costs and two moves.
- It is quite possible that there is not adequate room on the site for the high bay space. Proximity to the existing utilities would be very close.

**Scheme B – WEST OF BROWNING BUILDING,
WITH MINES BLDG. & R.O.T.C. REMOVED**



Scheme B

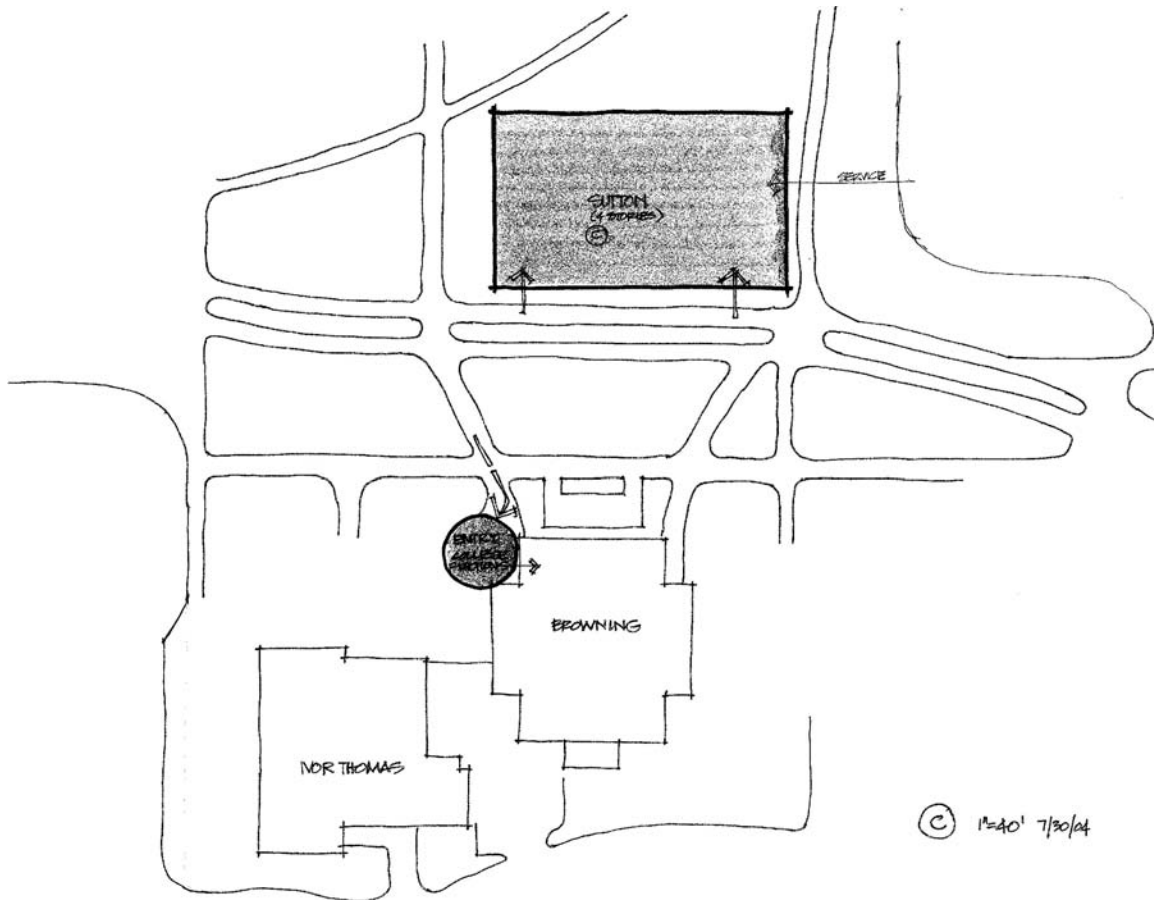
ADVANTAGES

- No utilities moved.
- Ivor Thomas Lab can stay where it is, no moves required.

DISADVANTAGES

- College remains somewhat disconnected.
- The 60-year-old Ore Dressing Building remains in use and will remain for a long time.
- Two buildings must be demolished, their occupants relocated and temporary space found before construction can begin. Occupants of the Mines Building would be required to move twice.
- It is not known to where R.O.T.C. would relocate or who would fund their new location.
- Ivor Thomas Lab is not an attractive building to anchor this location on campus.
- Main entrance will be divorced from Browning Bldg.
- Skybridge Connector at 3rd Floor is awkward and does not join Browning Bldg. in a good location.
- Only one floor would be connected.
- Main entry will likely be adjacent to the service area.
- Ivor Thomas Lab remains isolated.
- May be difficult to configure Sutton Bldg. efficiently.
- A Skybridge@ type connector is very costly.

Scheme C – EAST OF BROWNING BUILDING



Scheme C

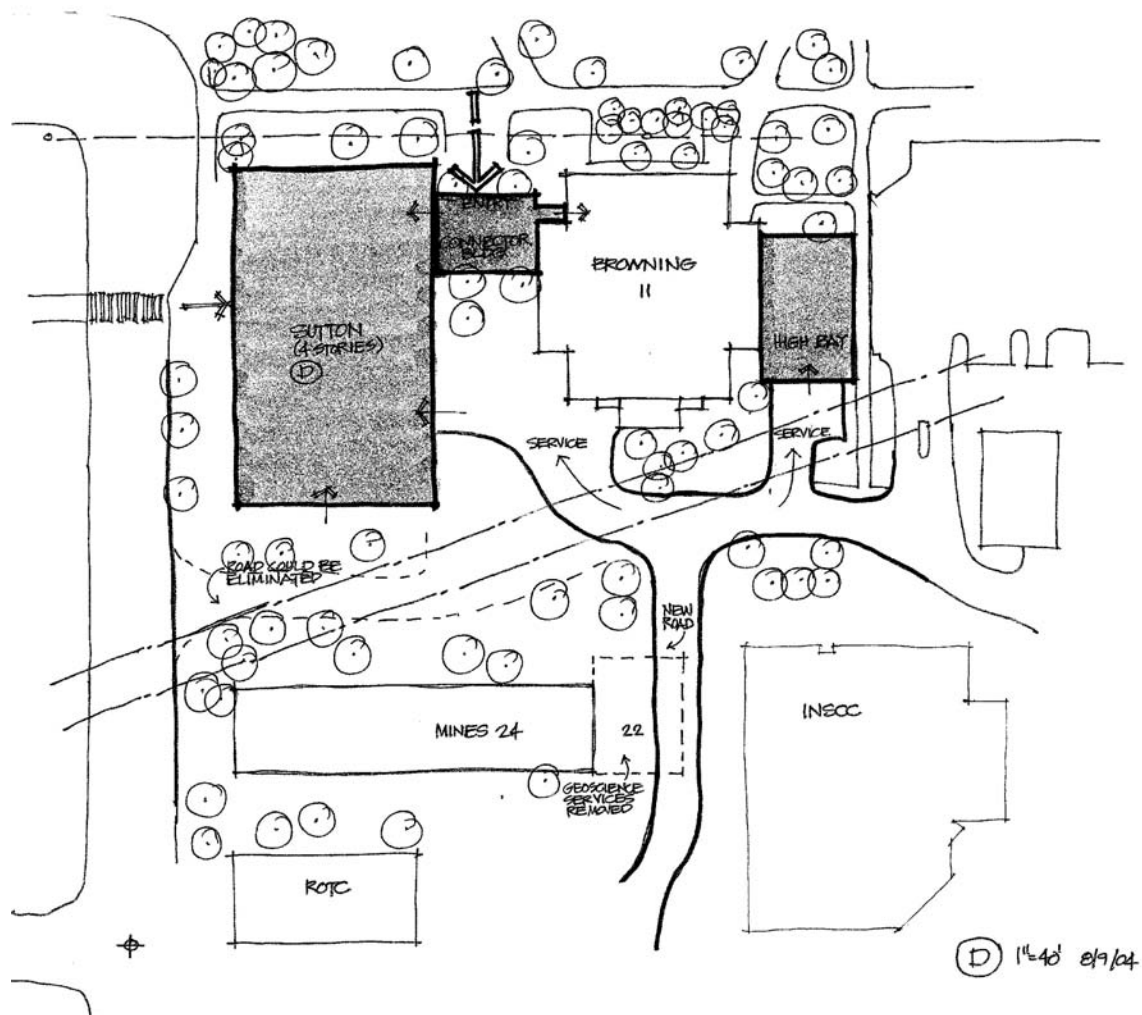
ADVANTAGES

- No utilities moved.
- Ivor Thomas Lab can stay where it is, no moves required.
- No demolition of any buildings required.
- Easy, simple, building site.

DISADVANTAGES

- College remains very disconnected.
- Sutton Bldg. will be approx. 150' from Browning Bldg.
- The 60-year-old Ore Dressing Building remains in use and will remain for a long time.
- Ivor Thomas Lab is not an attractive building to anchor this location on campus.
- No connection building at all.
- Main entrances will remain confusing.
- Service may be problematic and there will be two service points.
- University may well have other plans for this building site.
- This location is not favored by Campus Planning, in view of the Long Range Development Plan.

**Scheme D – SUTTON BUILDING NORTH OF BROWNING BUILDING –
HIGH BAY ON SOUTH**



Scheme D

ADVANTAGES

- Utilities may not need to be moved.
- Ivor Thomas Lab can stay in operation, until new High Bay is completed, then move once.

DISADVANTAGES

- At least two floors of Browning Bldg. will have all their south windows blocked.
- High Bay is visually awkward on south side of Browning so close to parking.
- Phased construction is required.
- Construction cost will be higher.
- Two service areas will be required, rather than one combined area.
- Entire west side of Browning will be service and not very pedestrian friendly.
- South side of Browning will not be pedestrian friendly.
- If Geoscience Service is not demolished, service access will be extremely awkward.
- This site for a lecture hall will not be available now or in the future.

Hand-drawn site plan of the Button Building site studies scheme. The plan shows various buildings and infrastructure. At the top, 'NORTH THAMES HIGHWAY' is labeled. Buildings are labeled 'BLDG. 57', 'BLDG. 58', 'BLDG. 60', 'EMRL 061', 'HEDCO 057', 'BROWNING OIL', 'MINES', 'KRC', 'KOTC', 'INSCC', and 'BUTTON BUILDING (2-4 STORIES)'. The Button Building is shaded and has 'NORTH THAMES REMOVED' written below it. An 'ENTRY CONNECTOR' is shown between the Button Building and Browning Oil. A 'STEAM GENERATING PLANT' is located near the Browning Oil building. A 'STEAM' line runs through the plan. A 'ROAD GRAD BE REMOVED' label points to a road. A 'SERVICE' line is also indicated. The plan includes a north arrow and a scale bar. The title 'BUTTON BUILDING SITE STUDIES SCHEME' is at the bottom right, with '1/20/04' and 'E' next to it.

Scheme E

ADVANTAGES

- Utilities will not need to be moved.
- Ivor Thomas Lab can stay in operation until new High Bay is completed, then move once.
- Ivor Thomas Lab will be located with other similar functions of the College.
- Service for the various College functions requiring high bay, industrial type space will be consolidated.
- The rising grade from south to north minimized the height impact of the building.
- The building will screen the work area between bldg. 59 and bldg. 58. Vegetation could be added to enhance this effect.

DISADVANTAGES

- Phased construction is required.
- High Bay is somewhat removed from other functions.
- Not an identified building site per the LRDP.
- Facilities Planning pointed out that this location may be more visible to vehicle and pedestrian traffic than options E₁ and E₂ and thus may not be the best choice in view of the LRDP.
- Will relocate the sidewalk and may make this area—which is to become a major pedestrian pathway—less pedestrian friendly.

Scheme E – Alternatives
SUTTON BUILDING NORTH OF BROWNING—
HIGH BAY IN OTHER LOCATIONS NEAR BLDG. 59

E₂ - Between Building 59 and Building 60

ADVANTAGES

- Less visual impact than Scheme E (which is north of bldg. 59).
- Will not affect the pedestrian pathway.

DISADVANTAGES

- The same 24" ø water line exists on this site, creating the same issues as E₁.
- Sewer and gas lines would need to be relocated.
- The entrance would have to be on the west and at a full floor below the entry level to Bldg. 59.
- Bldg. 58 is only partially occupied by CMES.
- Bldg. 60 is not occupied at all by CMES; it is occupied by Engineering.
- The existing retaining wall would need to be removed and the High Bay would have to create a new retaining situation.
- The access to Bldg. 60 would be completely blocked.
- The area at the south end of the upper service level would be demolished and the Mining Engineering outdoor functions would have to find a new location.
- There would be significant building code implications putting a new building so close to two other existing buildings.
- Increased truck service would be brought to the lower level where it intersects a pedestrian path.
- The construction costs would be significantly more than Scheme E or E₁.
- Not an identified building site per the LRDP.

Cost/Schedule Implications of Various Schemes

1. **Scheme A:**

- Includes expenses for difficult construction issues concerning service and separating noise and dirt of ore dressing facility from rest of Sutton Bldg.
- Includes increased moving and set up costs to relocate occupants of Bldg. 42 twice.
- Demolition of Bldg. 42 required, but new building on same site requires no site restoration.
- No phasing required, but temporary space will be required. Includes and rent or storage costs.
- Due to having to move twice and no obvious temporary location, research grants and the viability of some faculty members and programs may be in jeopardy—unknown, dollar impact.
- Lower General Conditions costs than other schemes.

COMPARATIVE COST IMPACT:

\$-0-(BASE CASE) +

(Plus Opportunity Cost of Lost Research Funding)

COMPARATIVE SCHEDULE IMPACT:

-0- days (BASE CASE)

2. **Scheme B:**

- Significant additional construction cost impact, particularly in site costs + \$325,080.
- Multiple moves required for occupants of Mines Bldg. and ROTC Bldg. + \$185,000.
- Demolition of two buildings required + \$451,292.
- Very complicated phasing required for Mines and ROTC; temporary space must be found + \$154,000.
- New bldg. for ROTC + \$1,169,000.
- Credit for not building Ivor Thomas - \$831,600.
- Additional supervision (general conditions) for new ROTC bldg. + \$80,000.

COMPARATIVE COST IMPACT

+ \$1,532,772

COMPARATIVE SCHEDULE IMPACT

-0- days

THIS LOCATION COMPROMISES A MAJOR PROJECT OBJECTIVE OF CREATING A NEW FRONT DOOR FOR THE COLLEGE.

3. **Scheme C:**

NOT RECOMMENDED LOCATION – NOT CONSIDERED FURTHER

4. Scheme D:

- Additional site (service area construction) costs but no need to separate functions with a single structure - \$34,020.
- Occupants of Bldg. 42 move only once - \$40,000.
- Demolition of Bldg. 42 required, but new building on same site requires no site restoration \$ unchanged.
- Phasing required but no rent or storage - \$96,000.
- High Bay as an attachment to WBB requires some additional construction cost + \$201,600 .
- Additional general conditions + \$80,000.

COMPARATIVE COST IMPACT

+ \$111,580

COMPARATIVE SCHEDULE IMPACT

+ 140 days

5. Scheme E:

- No need to separate incompatible functions—lower overall construction costs - \$204,120.
- Occupants of Bldg. 42 move only once - \$40,000.
- Demolition of Bldg. 42 required, but new building on same site requires no site restoration \$ unchanged.
- Phasing required but no rent or storage - \$96,000.
- Additional general conditions + \$80,000.

COMPARATIVE COST IMPACT

- \$260,120

COMPARATIVE SCHEDULE IMPACT

+ 120 days

6. Scheme E₁:

- Additional site costs (including 24" water line relocation) but no need to separate functions with a single structure - \$84,120.
- Occupants of Bldg. 42 move only once - \$40,000.
- Demolition of Bldg. 42 required, but new building on same site requires no site restoration \$ unchanged.
- Phasing required but no rent or storage - \$96,000.
- High Bay as attachment to Bldg. 59 requires no additional construction costs.
- Additional general conditions + \$80,000.

COMPARATIVE COST IMPACT

- \$140,120

COMPARATIVE SCHEDULE IMPACT

+ 135 days

7. Scheme E₂:

- Additional site costs (greater than E₁ and still including 24" water line relocation) but no need to separate functions with a single structure - \$50,520.
- Occupants of Bldg. 42 move only once - \$40,000.
- Demolition of Bldg. 42 required, but new building on same site requires no site restoration \$ unchanged.
- Phasing required but no rent or storage - \$96,000.
- High Bay not an attachment to Bldg. 58 or Bldg. 60 requires some additional construction costs + \$200,000.
- Note: Obtaining approval from College of Engineering could delay schedule beyond the schedule impact noted below.

COMPARATIVE COST IMPACT **+ \$93,480**
COMPARATIVE SCHEDULE IMPACT **+ 148 days**

THIS LOCATION BLOCKS ACCESS TO BLDG. 60

8. Scheme with Stand Alone location for High Bay (Not Shown):

- No need to separate functions with a single structure, but substantial additional construction costs for a small stand alone bldg. +75,600.
- Occupants of Bldg. 42 move only once - \$40,000.
- Demolition of Bldg. 42 required, but new building on same site requires no site restoration \$ unchanged.
- Phasing required but no rent or storage - \$96,000.
- No stand-alone location has yet been found that is compatible with the LRDP. Additional time spent identifying site could delay schedule well beyond well beyond the schedule impact noted below.

COMPARATIVE COST IMPACT **+ \$19,600**
COMPARATIVE SCHEDULE IMPACT **+ 140 days**

The following table summarizes the estimated cost and schedule impact of the schemes we considered:

Site Considerations—Frederick Albert Sutton Geology and Geophysics Building Program		
Summary Table		
Scheme	Cost Impact	Schedule Impact
A	+\$0 (plus lost research funding)	+0 days
B	+\$1,532,772	+0 days
C	N/A (not considered)	N/A
D	+\$111,580	+140 days
E	-\$260,120	+120 days
E ¹	-\$140,120	+135 days
E ²	+\$93,480	+148 days
Stand Alone	+\$19,600	+140 days

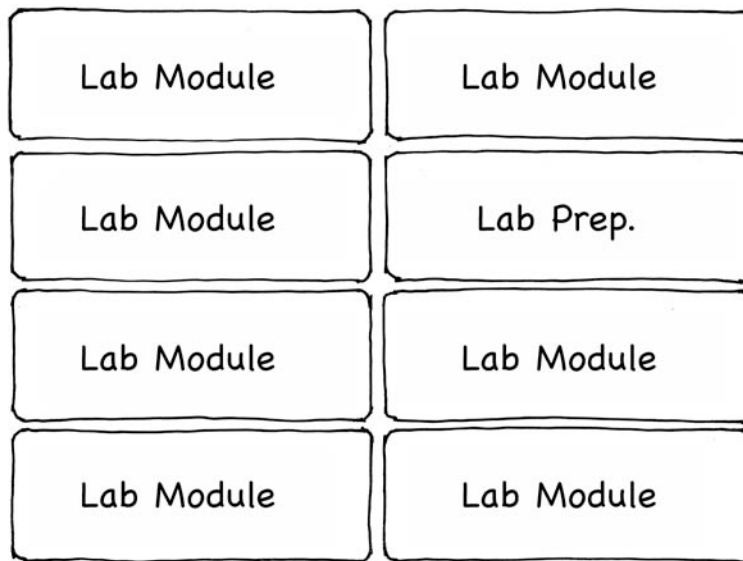
18.4 DEVELOPING THE SUGGESTED LAYOUT FOR THE SUTTON BUILDING

APPENDICES

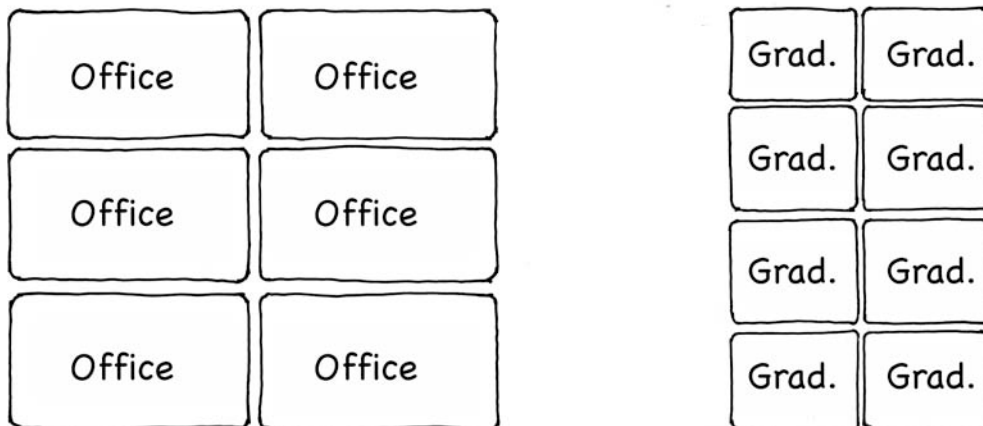
Developing the Suggested Layout for the Sutton Building

In developing basic concepts for how the building might fit together, the working group and programming team began by reviewing and discussing layouts of existing laboratory buildings. These were abstracted into bubble diagrams showing arrangements and adjacencies of offices, laboratories, graduate student stations, and other spaces. The group discussed and evaluated the pros and cons of various arrangements of spaces.

In a subsequent session, the working group took cardboard cutouts representing the different types of spaces and arranged them on the conference table in various configurations. They considered first grouping all similar functions together. For example, labs might all be clustered in one area of the building—perhaps an entire floor. The group represented this idea by laying out the cardboard cutouts something like this:

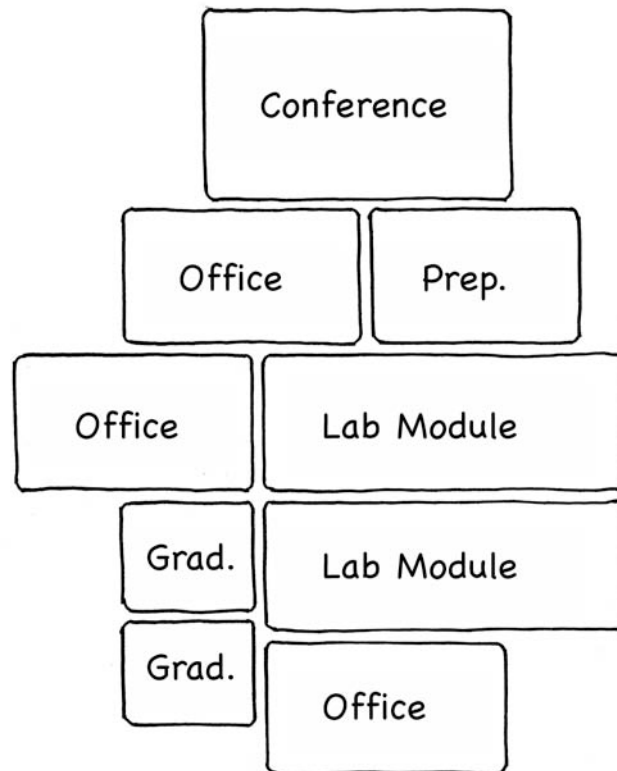


At this point the group did not leave space for corridors; they were not talking about building layout—just groupings of spaces. The group then extended the zoning concept to faculty offices, graduate student stations, and other spaces as well:



This arrangement of the cardboard cutouts represented one approach where homogenous groups of similar spaces—a group of labs, a cluster of all faculty offices, and a corral of graduate student stations, along with a central bank of conference rooms, a wing for classrooms, and centralized groupings of other spaces by type—could each be located in a discrete zone within the building.

At the opposite end of the spectrum from this zoning concept, the working group also took several of the cardboard cutouts from each of the different piles and grouped them together in decentralized clusters, each of which included several types of spaces. These clusters looked something like this:

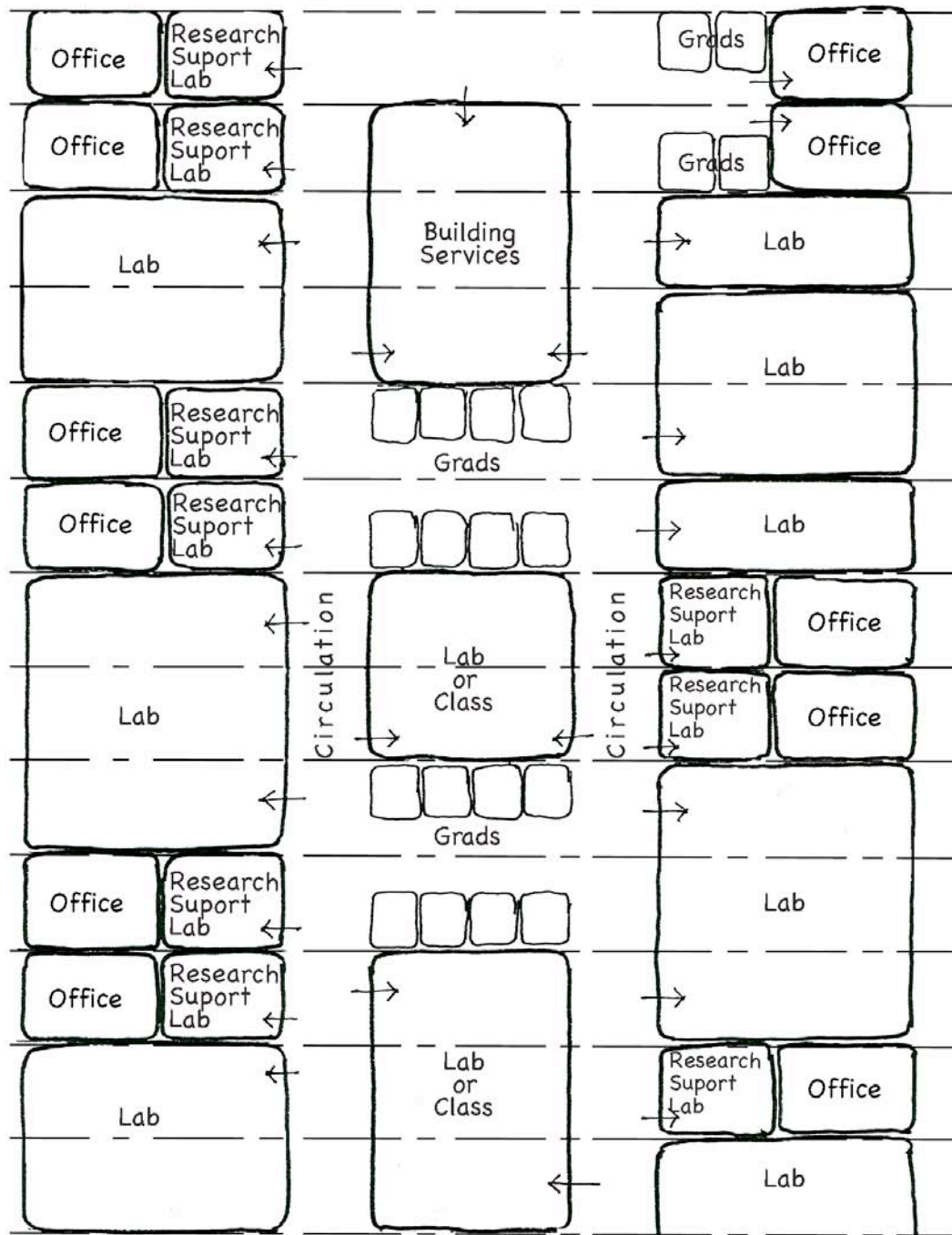


This cluster concept means integrating all types of spaces as much as possible into nodes that contain all (or most) types of spaces relatively close to each other. Faculty working in certain labs would have their offices and graduate students in close proximity, along with related support spaces. These nodes would be repeated in various departments or areas.

The working group expressed a desire to come as close to this cluster approach as possible and stay as far away as possible from zoning the building completely by function.

In order to take these layout ideas to the next step, the programming team tested the available floor plate and several modular layouts showing conceptual walkways, building common spaces, and some inferences about possible structure and building services.

When the programming team first presented these layout concepts, a consensus initially emerged in favor of the following modular layout:

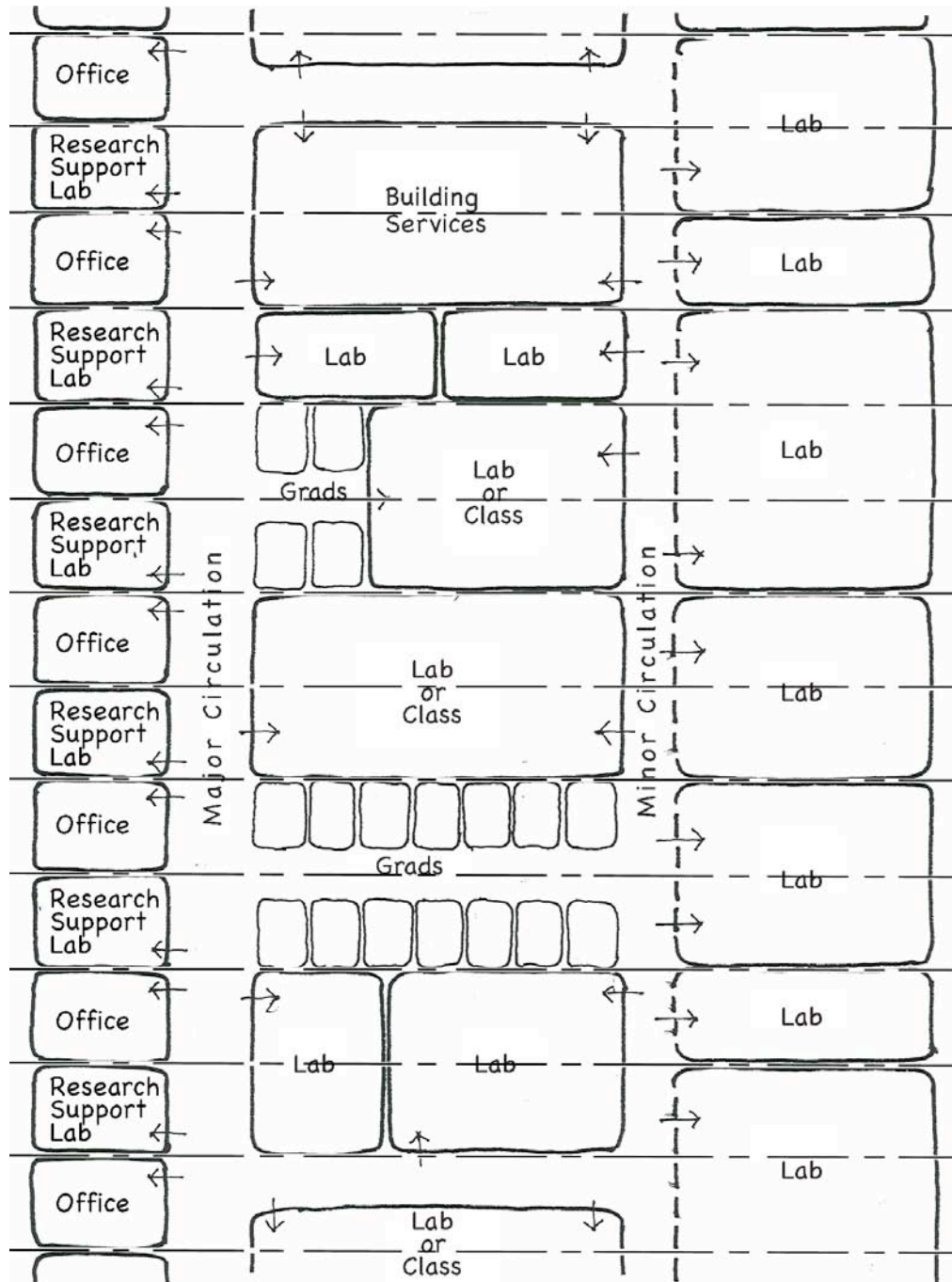


CLUSTERING CONCEPT

Concept Only - Not a Floor Plan

This layout allows substantial flexibility. Office/research support lab pairs can be interchanged with single-module labs. The layout also does a good job of mixing many types of spaces together in widely distributed groupings—in support of the cluster concept.

In investigating the matter further, however, the working group and the programming team reviewed the different structural, mechanical, and electrical requirements for labs as opposed to offices. They also considered the lack of flexibility represented by requiring faculty to access their offices through the research support labs (which means, among other things, that a research support lab could not be converted to another faculty office). At this point another preferred modular layout concept emerged:



ZONING CONCEPT
Concept Only - Not a Floor Plan

This concept still provides many of the advantages of the clustering concept but provides greater overall flexibility. Rather than isolating all offices in one area of the building with labs on a different floor, perhaps, all types of spaces can occur on each floor. Within each floor, however, labs and offices are collected into different zones.

Within these zones, labs can easily be reconfigured. In addition, if desired, several labs can be clustered together in an open setting without demising walls. No offices will interrupt. Labs, with all their specialized mechanical requirements, are congregated in one general area. And of course offices and research support labs are easily interchangeable.

We recommend that the layout of the new building be based on the zoning concept shown above.



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